APRIL 4, 1955

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

Transplanted Austrian process brings better quality, higher output at lower cost, page 80

OXYGEN STEELMAKING

CONTENTS — PAGE 5

BIG BROTHER TO A DENTAL DRILL

"Painless," efficient drilling of primary blast holes in the earth's rock crust—by either percussion or rotary action—is a cinch for Ingersoll-Rand's heavy-duty Quarrymaster. But its greatest advantage lies in the built-in hole cleaner, made possible by using B&W Mechanical Tubing for the drill rod. An automatic, continuous stream of compressed air is forced down through the tubular drill rod to the bit and back up, between drill rod and casing, to the surface, carrying the cuttings with it. And this hollow drill rod has been proved stronger, lighter and more rigid than a solid bar.

To satisfy vital requirements such as long life under extreme conditions of impact, B&W imparted desirable cold-worked properties to this tubing and also devised a special hot-upsetting procedure. With Quarrymasters now in service all over the world, the effectiveness of their drill rods made of B&W Mechanical Tubing has long since been decisively demonstrated.

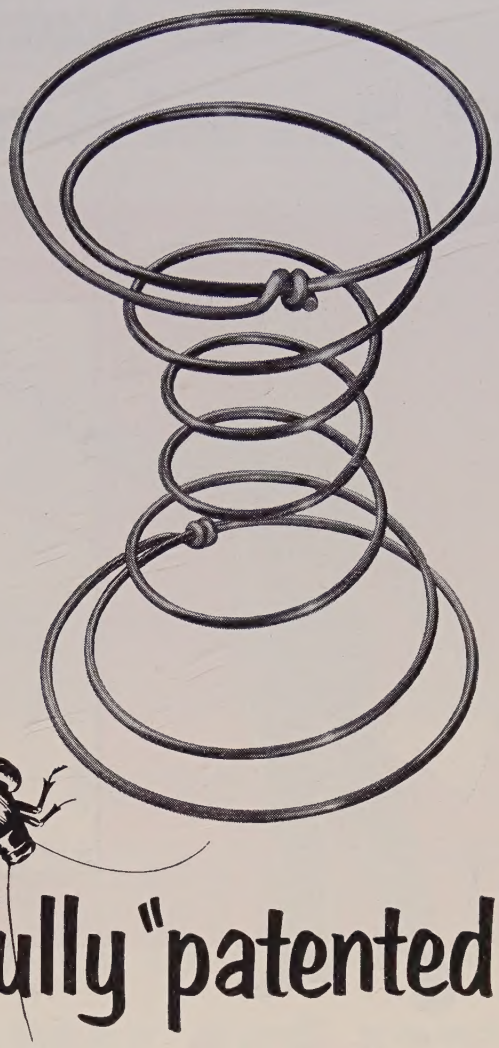
For a comprehensive story of how B&W Mechanical Tubing serves many industries, ask for Technical Bulletin 361 S

B&W TUBULAR PRODUCTS DIVISION

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa. and Milwaukee, Wis.: Seamless Tubing, Welded Stainless Steel Tubing
Alliance, Ohio: Welded Carbon Steel Tubing
Milwaukee, Wis.: Seamless Welding Fittings

TA-5005(M)

Livelier than a cricket



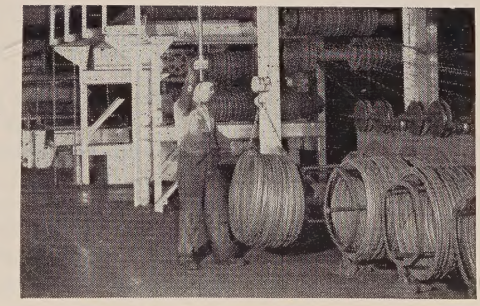
because it's carefully "patented"

Silver Star is a special-purpose spring wire that's engineered for a variety of upholstery applications. It coils and knots beautifully because it's so amazingly uniform in its properties and so true to gage.

One reason is the careful way we carry out the "patenting," the heat-treatment we give to selected steel rods before we draw them through dies into wire. This vital step helps to assure the proper strength, resiliency and other properties so necessary for making lively springs.

We'd be happy to ship you a trial lot of Silver Star in the gage and temper you specify. And after you've given it a full test in your own plant, be prepared to discover that it's as good as — or most likely, that it's better than — any you've used before!

And we wouldn't be surprised if you asked us to begin shipping Silver Star to you regularly. (It's happened that way before.) For full details just phone or write the nearest Bethlehem Steel sales office.

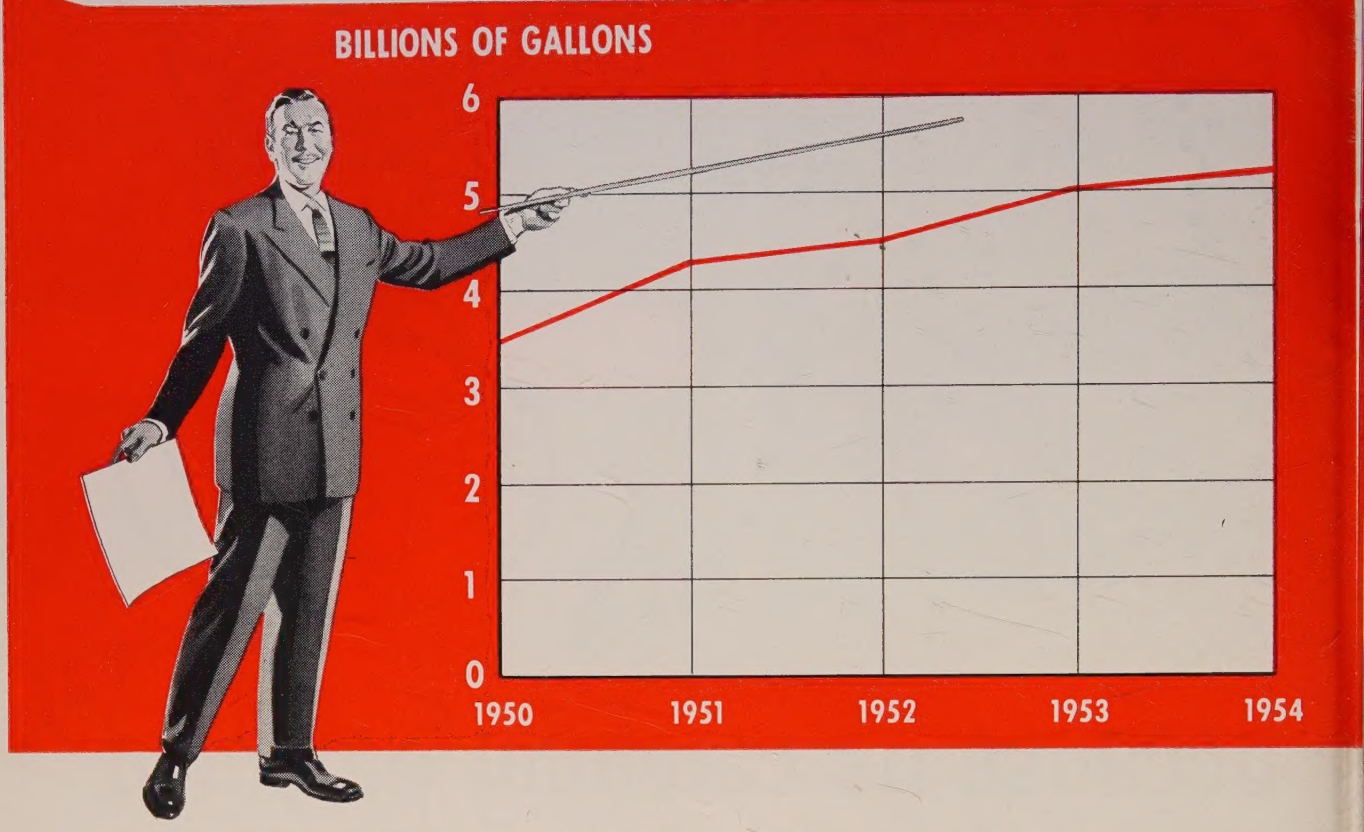


Selected steel rods are carefully patented before we draw them through dies into wire.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

America Is Using More and More LP-Gas Every Year!



It's Performance That Counts

PHILGAS® Is America's Largest Selling Brand of LP-Gas!

What's the reason behind Philgas popularity? In one word . . . performance! Philgas is a pure, clean gas containing no harmful contaminants to injure your products. You get high thermal content at low cost. And because a Philgas system is completely automatic, labor costs also are lower. You save money with Philgas!

Leading industries are cutting fuel and labor costs, *both*, with Philgas. They are using this clean-burning fuel for a variety of heating processes, for space heating in the plant, and as a fuel for trucks and heavy duty equipment! To find out how much you can save, write for more information about Philgas.

Philgas is our name for high quality LP-Gas—Bottled Gas—Butane—Propane.

Phillips 66 Philgas
THE ALL-PURPOSE FUEL

PHILLIPS PETROLEUM COMPANY

Sales Department • Bartlesville, Oklahoma

Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Houston, Tex., Indianapolis, Ind., Kansas City, Mo., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tampa, Fla., Tulsa, Okla., Wichita, Kans.

Hobart 900-ampere "Powromatic" Constant Voltage Welde connected to a tractor driven welding head for welding dec plate in the construction of river barges. Hobart's simplifie lightweight control kit is shown mounted on the tractor.

Photo courtesy of Maxon Construction Co., Marine Division, Tell City, Indian

Maxon simplified production and increased weld rate with this—

HOBART POWROMATIC

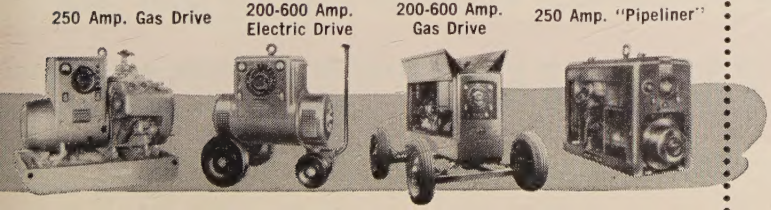
constant voltage welder and controls

"Powromatic" is Hobart's constant voltage power source and simplified controls for all automatic and semi-automatic welding processes.

MARINE DIVISION of Maxon Construction Co., Tell City, Indiana, recently began using a "Powromatic" welder to weld 5/16 and 3/8-inch barge deck plate. The length of the weld is approximately 85 feet with torch cut edges and no back-up on the butt joint. Conventional equipment was replaced by "Powromatic" because of easier arc control and the reduction of weight on the tractor type head, making it more maneuverable and easier to manipulate. Through the use of Hobart CV, the weld rate was increased from 30 to 40 inches per minute and the operation was greatly simplified.

OTHER ADVANTAGES found in the Hobart "Powromatic" welder and controls are: The operator is assured of a constant arc voltage because the brushes on the main generator end of the unit can be adjusted so that the voltage drop in extended welding cable is compensated for by a slightly rising voltage characteristic. And the arc voltage of Hobart's "Powromatic" remains constant even when there are fluctuations in the input voltage. It completely eliminates burn-back and burn-through due to arc voltage fluctuations.

THE SIMPLICITY and superior control of Hobart "Powromatic" welders are reducing manufacturing costs wherever they are installed. If you use automatic welding now, or intend to in the future, you should investigate "Powromatic." Check coupon and return for complete details.



HOBART BROTHERS COMPANY
BOX ST-45, TROY, OHIO, U.S.A. Phone 21223

HOBART BROTHERS COMPANY, BOX ST-45, TROY, OHIO

Without obligation, please send complete information on items checked below.

☐ 400-600 amp. Constant Voltage DC Arc Welder for Automatic Welding ☐ 250 amp. Gas Drive ☐ 200-600 amp. Electric Drive ☐ 200-600 amp. Gas Drive ☐ 250 amp. "Pipeliner."

NAME_____ POSITION_____

FIRM_____

ADDRESS_____

More Production, More Profit BY BROACHING . . .

Internal broaching of a cam ring. The spline form has unsymmetrical sides and cam form on the major diameter. The steel is soft and tends to tear, yet this Continental Broach sizes the I.D. and cuts 8 splines 5/16″ deep *in one pass.*

REMOVE STOCK TO PRECISION LIMITS FAST . . . ROUGH AND FINISH IN ONE PASS!

The scope of Broaching has broadened in recent years. Many broaching operations do precision work in far less time than other metal-cutting methods.

Continental Engineers have for years been designing all types of cutting tools, broaches and broaching fixture They can recommend the most economical way to do your work.

For facts about increasing your produ by broaching, call in your local Ex-Ce representative—or write Continental in Detroit for Cutting Tool Catalog.

CONTINENTAL TOOL WORKS
CTW
EX-CELL-O CORPORATION

Continental TOOL WORKS

DIVISION OF EX-CELL-O CORPORA
DETROIT 32, MICHIGAN

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING
Vol. 136 No. 14 April 4, 1955

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

Metalworking Outlook 29

The Editor's Views 33

STEEL's Quarterly Survey of Industrial Components 35
Inventories lengthen, but so do delivery dates

Stampers: Pressing for New Business 36
Makers see a 10-per-cent gain in '55. Some are broadening their base of operations to increase sales

The Heat's on Refractories 38
Customers want superfast delivery, generally getting it

House Organs Make Harmony 39
They cost management $140 million a year. They're worth more

Windows of Washington 42

Service Spells Sales 46
Precision Castings designs end products to get business

Mirrors of Motordom 49

The Business Trend 53

Men of Industry 57

Technical Outlook 77

Impact Extrusion Puts Squeeze on Parts Cost 78
The forming process has taken on a broader dimension. Complex parts, once machined, are one-shot items

Oxygen Steelmaking Arrives 80
People who have seen the results predict open hearths are in for stiff competition

Sound Digs Holes 91
Ultrasonic machine cuts a hole through a steel sleeve by bombarding it with boron carbide grit and air bubbles

The Change Is Accounted for 98
Here's a system for predicting stock allowance necessary to withstand changes during heat treatment

Fuel Switch Cuts Handling Costs 103
Trucks converted to LP-gas will pay for themselves in fuel savings and combustion-system maintenance costs

New Products and Equipment 107

The Market Outlook 125
Metal Prices and Composites begin on Page 126

Nonferrous Metals 128

Behind the Scenes	6	Foreign News	45
Letters to the Editors	10	Obituaries	60
Calendar of Meetings	25	Helpful Literature	118

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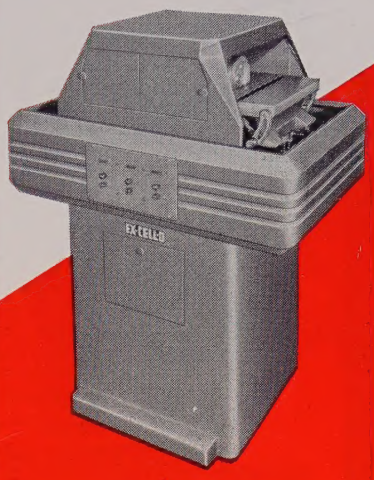
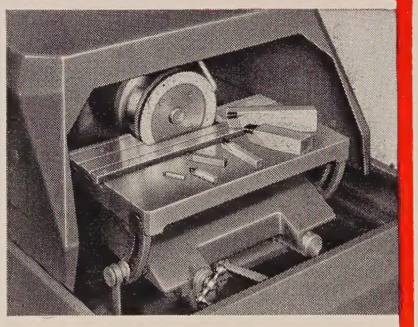
This Sturdy Precision
Tool Grinder
BY EX-CELL-O



Style 44-A, is one of the newest in a complete line made by Ex-Cell-O for sharpening carbides, high speed steels, and cast alloys. All are double end models, equipped for face grinding on cup-type wheels; for efficient and economical conditioning of single-point tools.

XLO
EX-CELL-O for PRECISION



Tables are big to give good support to the tools. They are easily adjustable.

There are Ex-Cell-O Tool Grinders to suit the needs of every shop, large or small. For data on this complete Tool Grinder line, write Ex-Cell-O in Detroit, or call your local Ex-Cell-O representative.

55-6

EX-CELL-O
CORPORATION
DETROIT 32, MICHIGAN

DON'T TRIFLE WITH
Your Reputation!

"Tubing by TMI" knows that much of the success of your new designing depends on its performance—that the precision built into it controls costs on your production line—that getting there "on time" makes a friend with management every time.

Your reputation is our responsibility . . . and close tolerance (to .0001" when necessary) is our specialty regardless of the most challenging specifications for finish, straightness or shaping inside or out! We are always busy supporting the reputations of our customers with tubing that earns their confidence year in and year out.

Your Tubing Problems?
The chances are 100 to 1 TMI already has the answers. Try them—See for yourself!

SMALL DIAMETER COLD DRAWN STAINLESS STEEL AND SPECIAL ALLOY TUBING—.050 TO .625 O.D.

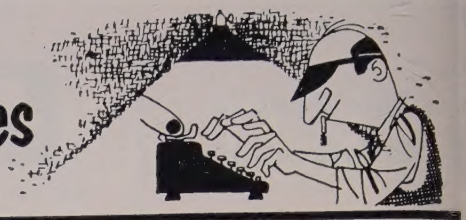
All types of stainless steel—seamless and welded • Hastelloy alloys B★, C★, F★, X★, Multimet (N-155) alloy★, and Haynes alloy No. 25★ • One piece (no weld) round and special shape bulb capillary units • Multiple diameter I.D. and O.D. tubing to specifications • Custom shapes • Tube Methods Inc. uses the latest type electronic testing equipment as part of its quality control—"check and double check"—from raw material to finished tubing. We welcome the opportunity to work with your engineers on tubing research and experimental projects.

The Mark of Quality TMI

★Registered trademarks of Haynes Stellite Co., Division of Union Carbide and Carbon Corporation.

TUBE METHODS INC.
METALLURGISTS • ENGINEERS • MANUFACTURERS
BRIDGEPORT (Montgomery County), PA.

behind the scenes



Stamp, Stamp, Stamp

Stout Stanley Stewart, amiable assistant editor, tells us that there is still a big punch in the metal stampings business. Stanley made it his business to examine the prospects for stampings, and presents his findings on page 36 for your consideration. Seriously, the reading of articles in STEEL represents a quick and painless method of absorbing information because the stuff is neatly packaged and well seasoned.

Now, in this matter of prospects for stampings, Stanley assembled enough information to report that there would be a 10 per cent increase in production this year. In one page, he observes the strained relations existing between job shops and captive shops and comments on the keen competition shaping up. It is of interest to note in passing that "stamping" comes from an Anglo-Saxon word "stempan," meaning to crush or bray. Bray, aside from meaning to pound or spread, also means "to utter a loud, harsh cry."

"And believe me," said Stewart, absently tapping his teeth and gazing blankly at the wall, "loud, harsh cries are going to echo through the stamping business this year when defense orders drop; they're already down 8 per cent, you know."

We didn't know, but we're going to read the article right now.

Popular Chart

Monday, Jan. 10 was cold and clear in Cleveland; the sun was shining, the thermometer stood at 33 degrees, and STEEL came out as usual. There was nothing extraordinary to mark the issue; no signs, omens, meteors or portents caught our attention. Yet, that issue carried a Hardness Conversion Chart on page 70 which started something like a small tornado in Readers' Service. Beverly Cline and Alice Dailey, of that department, began sorting requests from staff engineers, industrial engineers, materials handling engineers, master mechanics, technical service directors and chief inspectors. The orders piled up like snowdrifts; two weeks after publication, 960 requests for the Hardness Conversion Chart had the girls standing on their ears. Now, almost three months later, we learn that more than 3000 charts have been sent out.

"Can you beat it?" inquired Miss Dailey, popping her pretty blue eyes at a tear sheet of the phenomenon. "This thing tells how you can convert, say, the Rockwell C scale to Brinell indentation diameter in millimeters, and everybody goes nuts about it; we've had requests from as far as England and Brazil. I suppose it's a wonderful thing—but as far as I'm concerned, it would be more useful if I could use it to convert some of my lousy bowling scores."

Bindery Boys Bitter?

Down in the bindery, where these pages are skillfully and swiftly assembled in their final form, Harry Barnes and Al Milano were about to go out to lunch. The section of last week's STEEL was moving into their sphere of operation, and everything was going well when Harry spotted the paragraph we printed about the farmer and the trees.

"We'd like to let you know," they told us later, "that you wrecked our entire lunch hour. So long as there were no puzzles, we never bothered reading your drivel; *now* we have to use our lunch time to figure answers! As for them trees, we got TWO answers!"

They did, too; and both were right. O.K., boys—try this one:

A man by the name of Gooch McToober had a store full of raincoats selling at $2 each. Although the garments were of exceptionally high quality, they weren't moving well so Gooch reluctantly marked them down. Crowds of customers immediately swarmed into the store, and when Gooch rang up the last sale at 5:30 p.m., he was delighted to learn that he had grossed $603.77.

Can you figure from this the number of raincoats our boy Gooch sold that day? His middle name, by the way, is Fletcher.

Shrdlu

(Metalworking Outlook—Page 29)

giant cleaning jobs MADE EASY

5-Ton Loads Cleaned in Minutes with this Wheelabrator® Tumblast

Big Pay Loads — 10,000 pounds of steel castings spotlessly cleaned in from 12 to 20 minutes in a 63" x 96" Wheelabrator Tumblast . . . provide big savings for Maynard Electric Steel Castings Co., Milwaukee. As a result of the cost-reducing, speed-cleaning performance of this 70 cu. ft. capacity airless blast machine, Maynard was able to slash overall cleaning time 25% even with a 33-1/3% increase in casting tonnage.

Formerly all cleaning was done in three air blast rooms working two nine hour shifts . . . 72 man hours daily. All cleaning is now performed with only 54 man hours charged to the cleaning room. This reduction is due to the ability of the Wheelabrator Tumblast to handle pieces weighing up to 8,000 pounds each and to clean mixed loads weighing up to five tons.

Even though your cleaning requirements may not be on this large a scale, the airless Wheelabrator will provide improved cleaning performance at greatly reduced cost for any size problem. More than 6,000 Wheelabrators are now in operation. Write today for the complete story on this modern cost-cutting cleaning method. Ask for Catalog 74-B.

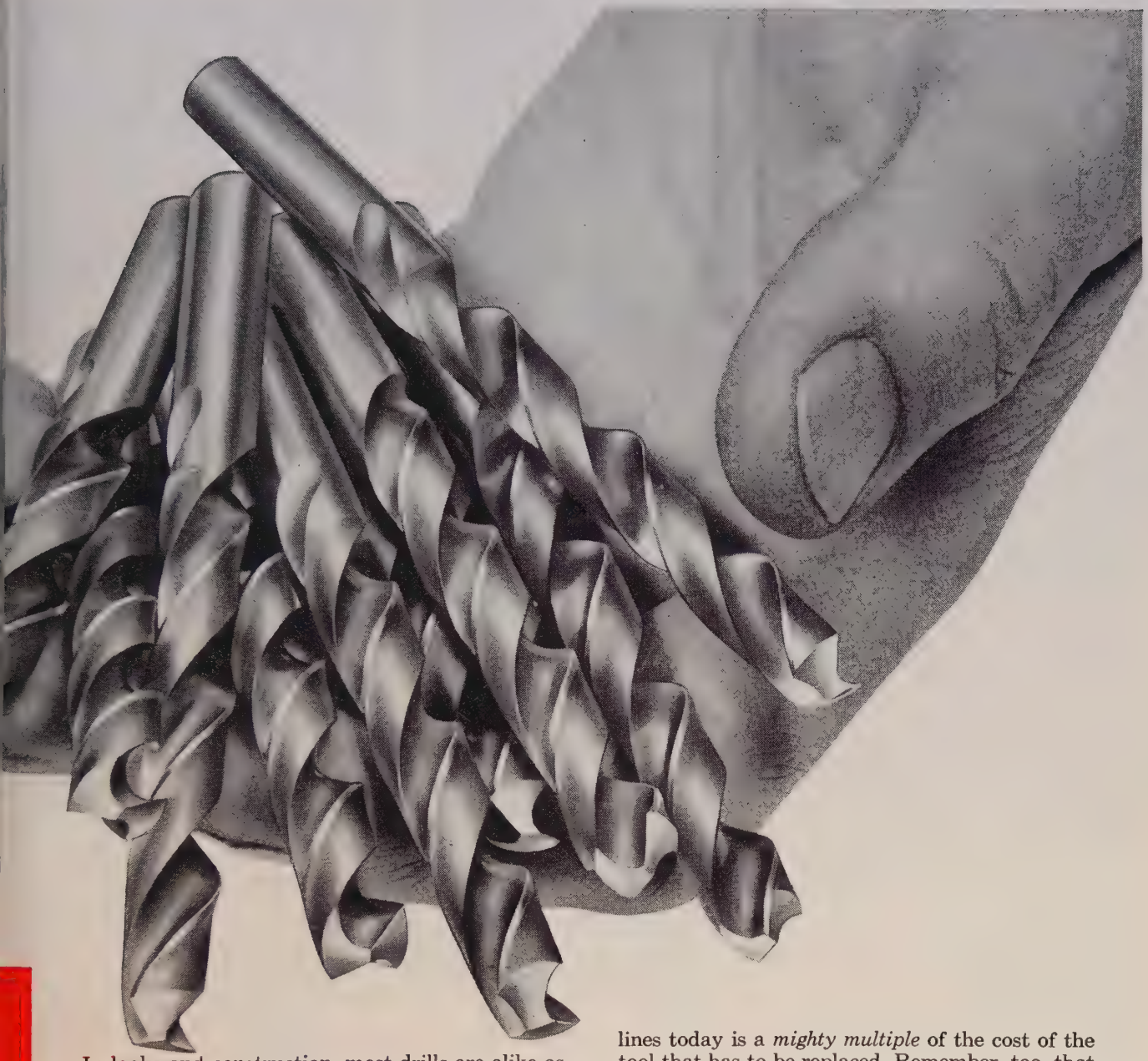
American WHEELABRATOR®

World's largest builder of airless blast equipment

AMERICAN WHEELABRATOR & EQUIPMENT CORP., 509 S. Byrkit St., Mishawaka, Indiana

"Sure, all Drills look alike . . . until you

LOOK AT THE SCORE!"



In looks and construction, most drills are alike as peas in a pod. *But the all-important difference is in the accuracy and quantity of the holes they cut.* So when you come right down to it, the price of the drill itself means little. It's the *cost-per-hole-produced* that really counts.

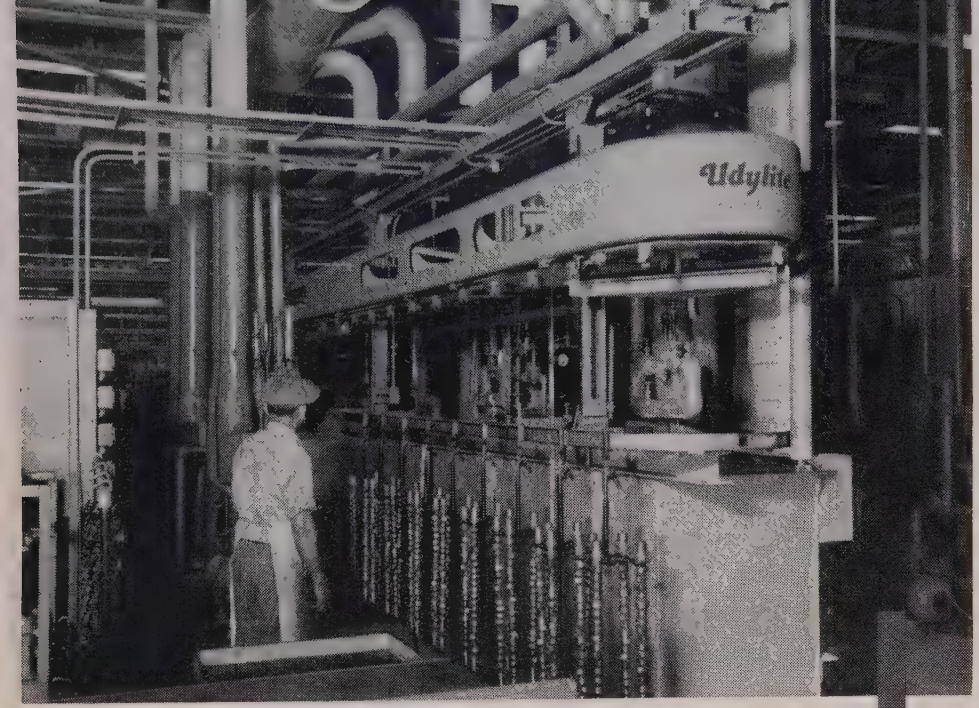
Look at it this way: An increase of 10% in production . . . plus an automatic reduction in set-up and down-time . . . can make the difference between profit and loss on any production job. On top of that, the assurance that every hole is accurate and uniform means that spoilage and reworking are practically eliminated. And remember that the cost of down-time on most production lines today is a *mighty multiple* of the cost of the tool that has to be replaced. Remember, too, that it takes only one sub-standard drill in a gross to wipe out any saving that may have been made on the tool-purchase.

Now . . . if you want the real score on drill performance (and on the complete line of Morse Cutting Tools) just ask your Morse-Franchised Distributor. He's the man you can always bank on for the tops in quality and the best in service.

MORSE TWIST DRILL & MACHINE COMPANY
NEW BEDFORD, MASSACHUSETTS
(Division of VAN NORMAN CO.)
Warehouses in New York, Chicago, Detroit, Dallas, San Francisco

MORSE
Cutting Tools

. . . buy them by phone from your Morse-Franchised Distributor and save ordering time



SK THE COMPANY WHO OWNS THEM

New Packard Plant Uses Three Udylite Plating Machines in Modern, Efficient Manufacturing Lines

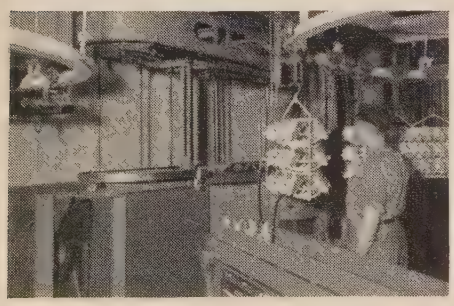
At the Packard Motor Car Company's new, modern Utica, Michigan plant, three Udylite Junior Full Automatic metal finishing machines are processing parts on three feeder lines that deliver components to the final assembly line. The machines are placed right in the flow of work without the necessity of a special plating room.

These Udylite machines are used for Lubrite of camshafts (above); tin plating pistons (lower left); and anodizing of miscellaneus parts (lower right).

The Udylite Junior Full Automatic is ideal for any production line. There is no need of moving parts from a line to a remote plating department and then back to the line.

The Udylite Junior will give you high production capacity with a minimum of floor space. It's portable—easily moved when you change your plant layout. But best of all, its cost is low.

A Udylite Junior Full Automatic may be the answer to your factory automation problem. Let us tell you more about it.



WORLD'S LARGEST PLATING SUPPLIER

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

LETTERS TO THE EDITORS

Cost Reduction Program

We enjoyed your article "So You Want to Cut Costs" (Mar. 14, p. 93). On Apr. 6-7 we will speak on the installation and development of a cost reduction program at the Industrial Management Institute being held at the University of Wisconsin. Representatives of Wisconsin, Minnesota and Illinois industries will attend. May we have 50 copies to distribute to these industrial representatives?

R. A. Dimberg
industrial engineer
Allen-Bradley Co.
Milwaukee 4, Wis.

We would appreciate two copies. This is one of the best articles we have read in a long time. There is more food for thought (and profit making) in it than I have seen in any trade magazine since World War II.

H. W. Harder, secretary
Simplicity Engineering Co.
Durand, Mich.

We have just read this article. Excellent! May we please have a reprint?

J. H. Rudy
cost reduction administrator
Radio Corporation of America
Lancaster, Pa.

• *Sent.—ED.. .*

Word to the Wise

I am enjoying your Modern Heat Treating Series. Are you contemplating compilation of the entire series for distribution? If so, I would like to have a copy for our files.

M. Kawaguchi
chief metallurgist
Hall-Scott Motors Co.
Berkeley, Calif.

• *We tentatively plan to reprint the series in book form sometime early in 1956.—ED.*

Steel Finale, 1954

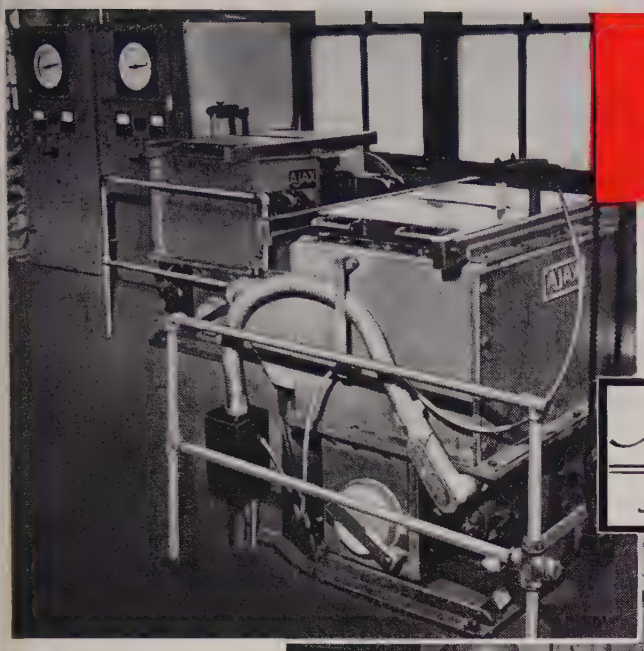
We would appreciate three copies of your article "Where Finished Steel Went in 1954" (Mar. 21, p. 84).

Bernhard Gordon
Gordon-Burke Steel Co.
Chicago

Please send us three copies . . .

S. W. Holmes
purchasing agent
Indiana Steel & Wire Co. Inc.
Muncie, Ind.

(Please turn to page 12)



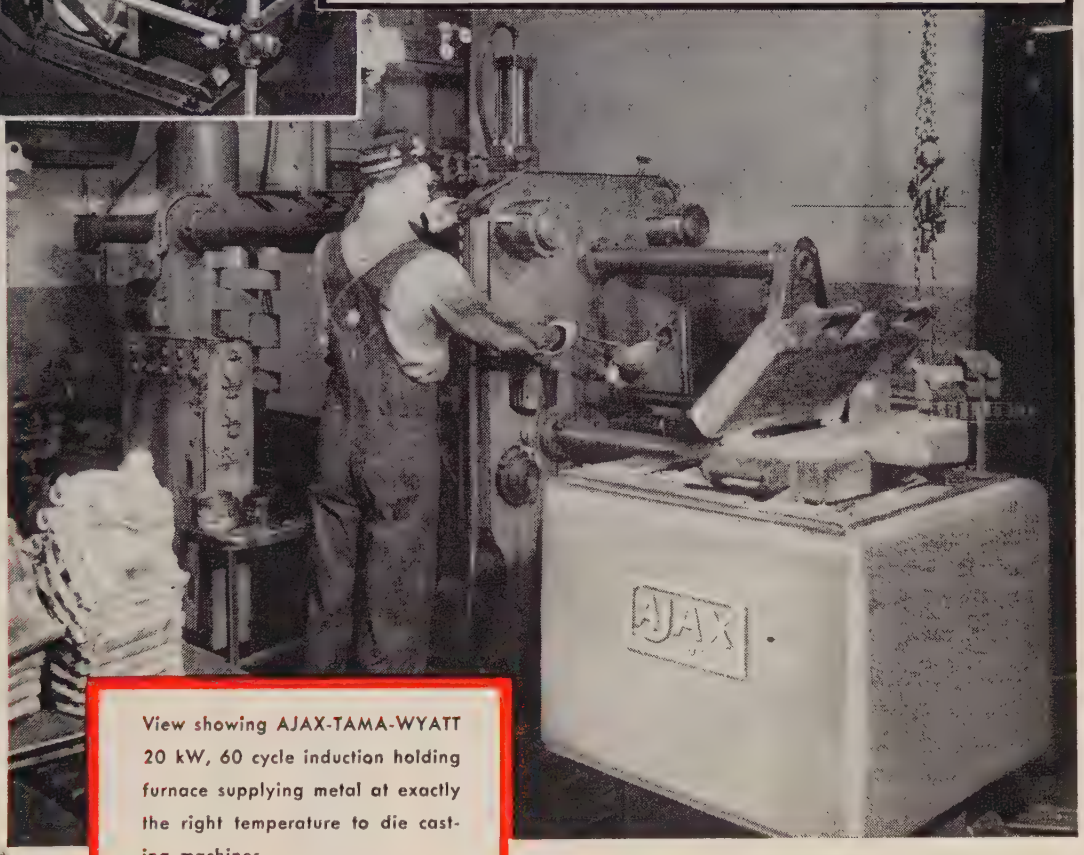
View above shows AJAX melting furnaces, with control cabinets in background.

AJAX INDUCTION FURNACES

mean Higher Quality Castings for...

Advance
TOOL & DIE CASTING COMPANY

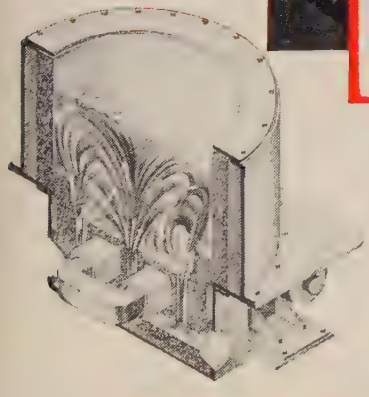
Aluminum DIE CASTINGS *Zinc Base*



View showing AJAX-TAMA-WYATT 20 kW, 60 cycle induction holding furnace supplying metal at exactly the right temperature to die casting machines.

The Furnace That Stirs Itself...

The sectional view below shows the twin-coil stirring action of the 100 kW, 60 cycle. AJAX Induction Furnace. Heat induced in the secondary channels below is conveyed throughout the melt by electro-magnetic circulation, as shown by the arrows.



Inherent stirring action of these furnaces has proved most valuable to ADVANCE TOOL & DIE CASTING CO., Milwaukee, Wisc. In full operation for 18 months, the most important result of the use of these furnaces is higher quality die cast aluminum parts. The alloy is held in uniform solution, resulting in elimination of oxides, reducing hard spot trouble in secondary machining to a negligible factor. Temperature of the melt is held at 870° F. through on-off control of the low power circuit. Working conditions are made more comfortable because of low heat losses. The units take up very little floor space.

AJAX ENGINEERING CORP., TRENTON 7, N. J.

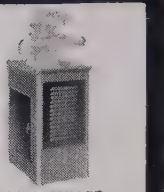
AJAX TAMA-WYATT

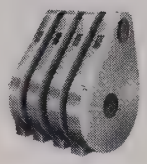
INDUCTION MELTING FURNACE

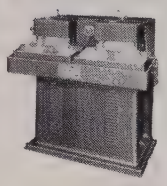
AJAX ELECTRO METALLURGICAL CORP., and Associated Companies
AJAX ELECTROTHERMIC CORP., Ajax-Northrup High Frequency Induction Furnaces
AJAX ELECTRIC CO., The Ajax Hultgren Electric Salt Bath Furnace
AJAX ELECTRIC FURNACE CORP., Ajax-Wyatt Induction Furnaces for Melting

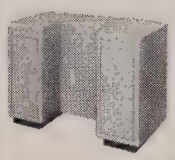
COMPONENT FABRICATION

by KIRK AND BLUM

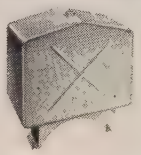

SMALL MILLER PEDESTAL

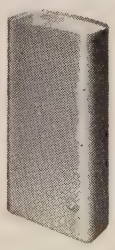

GUARDS


CARBIDE GRINDER BASE


MACHINE BASE

TIMER CASE


FUEL OIL TANK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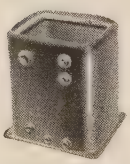
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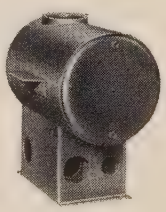
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LETTERS

(Concluded from page 10)

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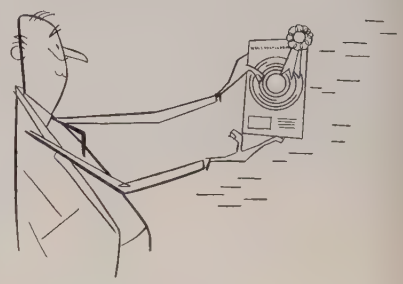
Samuel Moment
president
General Etching & Mfg. Co.
Chicago

Please forward one-half dozen copies.

John B. Girdler
sales manager
Vanadium Corp. of America
New York

• *Sent.—ED.*

Chart Aids in Work



The Steel Hardness Conversion Chart (Jan. 10, p. 70) which you recently sent is a convenient aid in my work. Would you send a half-dozen more for my fellow production workers?

George Brady Jr.
Pratt & Whitney
Division Niles-Bement-Pond Co.
West Hartford 1, Conn.

Please send several of these nomographs. I believe they would be of value to our men in the laboratory.

Hubert M. Goldman
assistant to sales manager
Enthone Inc.
New Haven, Conn.

• *Sent. Copies are still available—ED.*

Tests Prove Differently

Your article, "Tips on Titanium Cutting (Mar. 7, p. 106), states: "Band sawing at this time seems practical only for thin sections."

High speed steel saw band and heavy power band machines now make it possible to cut many types of titanium in heavy sections. We have conducted tests on different band sawing machines under laboratory and production conditions and have proved that this is practical. Many of our machines are being used successfully in band machining titanium in heavy sections.

George H. Sheppard
director of research
DoAll Co.
Des Plaines, Ill.

• *Thank you for the information.—ED.*

Men Want Series

Please send tear sheets of the five articles on heat treating tool steels (Jan. 24, p. 70; Jan. 31, p. 72; Feb. 7, p. 111; Feb. 14, p. 87; Mar. 14, p. 106). We will order reprints of the complete Modern Heat Treating Series when they are available. Meanwhile, our men are anxious to have the series on tool steels.

Frederica M. Weitlauf
librarian
Timken Roller Bearing Co.
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• *Sent.—ED.*

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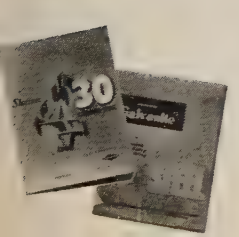

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Floor space costs money. Hit-and-miss methods of storing in-process parts and materials consume valuable floor space that could be used more profitably for production equipment.

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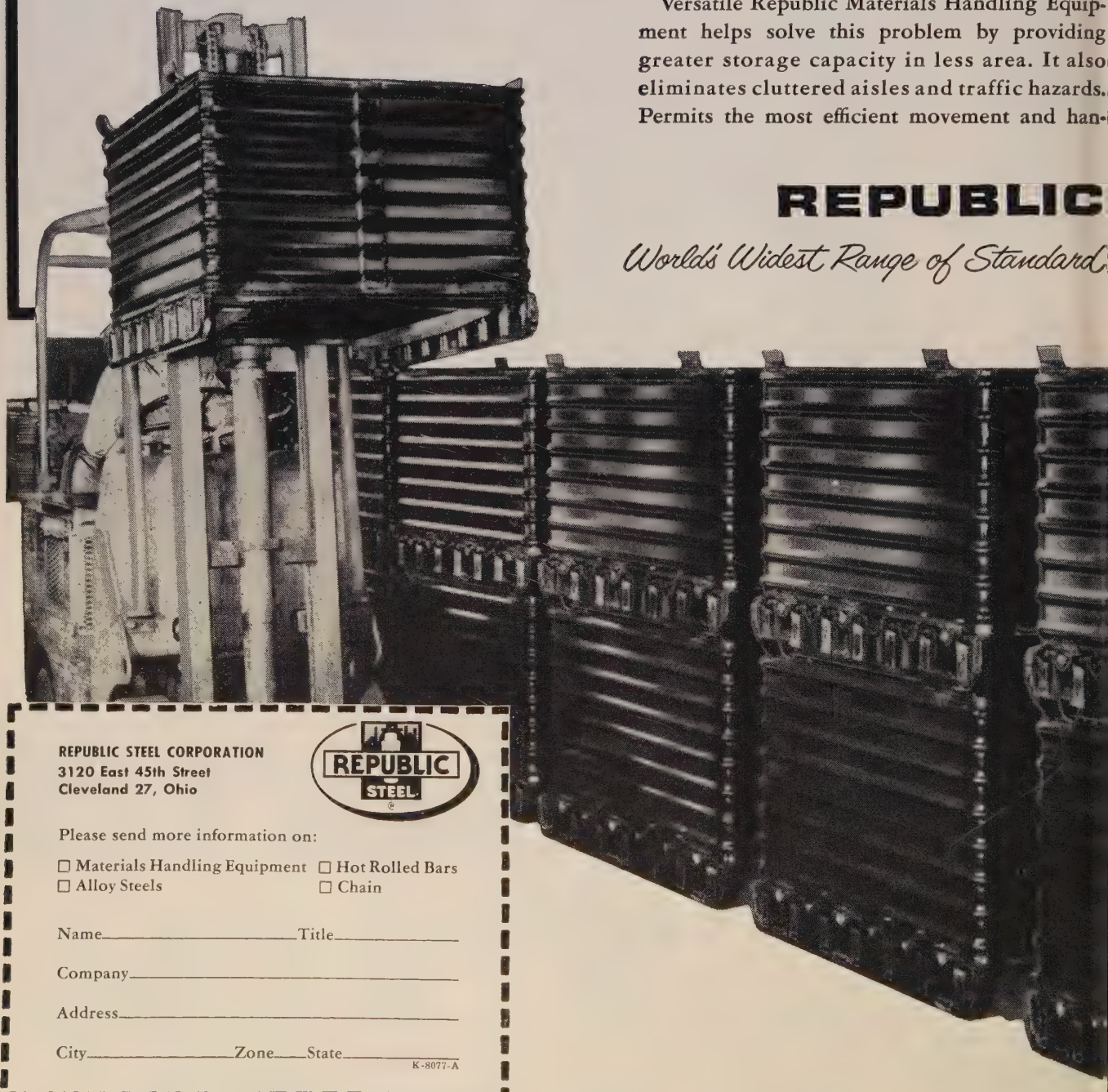

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STEEL

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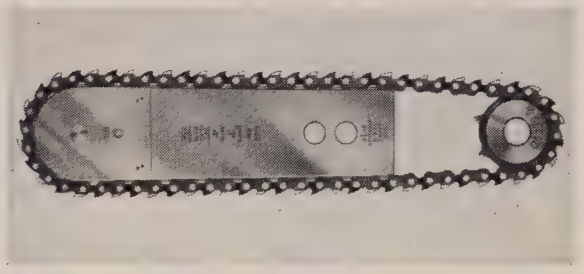
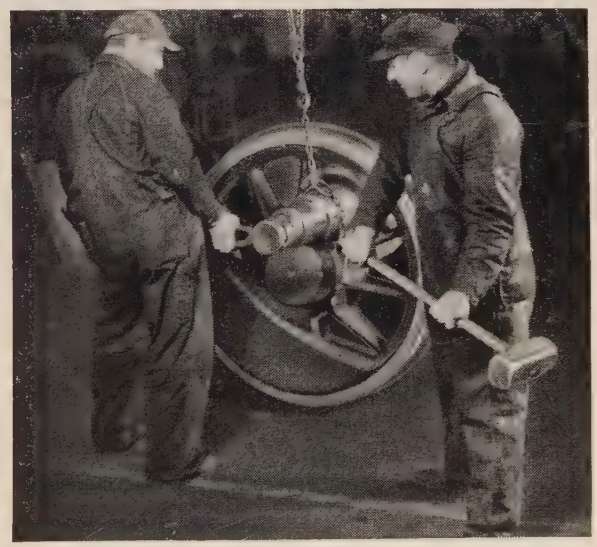
THIS MAIN FRAME BEARING MEMBER for a diesel locomotive was made from Republic C-1020 forging stock. Countless forging and general manufacturing companies look to Republic as a dependable source for hot rolled steel bars. Rounds, squares, hexagons, octagons and flats are produced in all grades of carbon, alloy and stainless steels. Republic also supplies hot rolled special sections for economical mass production of steel parts where the section conforms to the predominating cross section of the part.



ALLOY STEEL INCREASES TOOTH LIFE ON CHAIN SAW. Speeds up to 2000 feet per minute are tough on teeth of this chain-saw mortise chain. Ordinary steel teeth snap off. Republic metallurgists recommended a standard alloy, not too high in chrome, to the manufacturer, W. H. Field Co., Boston, Mass. Cutter life was increased; heat treating methods improved; form milling eliminated by buying a special shape.



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Up to 8 poles N.O. or N.C. contacts. Have double break, silver contacts.

Hum-free

A magnetic latch keeps the contactor closed without using any coil current.

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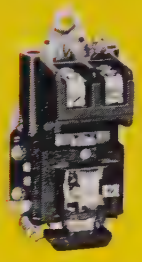
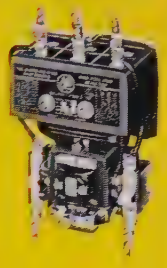


Available in 8 sizes up to 900 amp. Solenoid operated silver alloy contacts.

Starters



Solenoid starters in 8 sizes up to 300 hp, 220 v; 600 hp, 440-550 v.

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For reversing, transfer, or pilot duty.

Limit Switches

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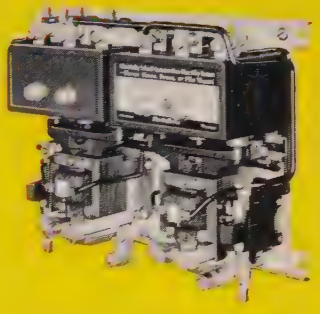
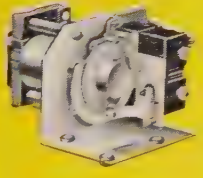


Two interlocked solenoid starters with dependable solder pot overload relays.

Pneumatic and Motor-driven Timers

Has pneumatic bellows for timing from 1/6 to 180 sec.



Motor driven timer for laundry or other reversing service. Can be set for 2, 3, 4, or 6 motor reversals per minute.

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Handy auxiliary contacts which can be attached to Allen-Bradley Sizes 0 to 3 starters. Mounted quickly on the arc hood without disturbing wiring. Easily changed from N. O. to N. C. contacts or vice versa.

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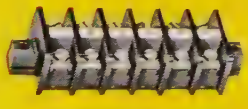

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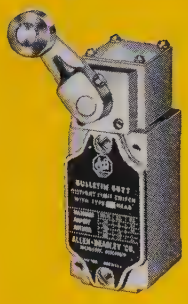
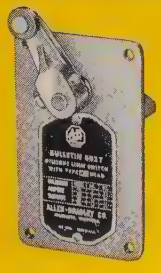
OILTIGHT LIMIT SWITCH
WITH ADJUSTABLE OPERATING LEVER



Roller Lever Maintained Contact



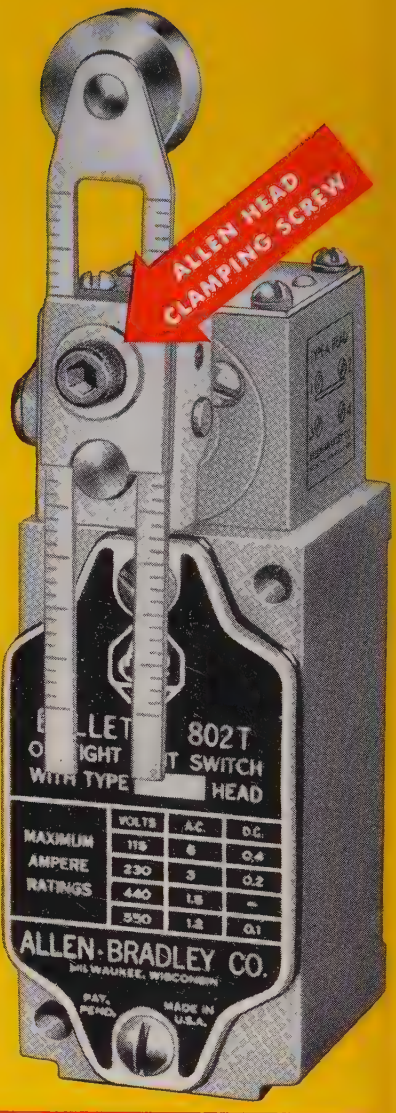
Flush Plate for Mounting Limit Switch in Cavity

Roller Lever Spring Return

Another handy unit has been added to the broad line of Allen-Bradley oiltight limit switches... the NEW Type 802TG limit switch. The operating lever is adjustable from ¾ inch to 3 inches in radius.

The lever can be set at any angle on the shaft, and the operating head can be placed in any one of four positions—0—90—180—270 degrees on the body of the switch.

Like all Bulletin 802T limit switches shown here, the new unit has a snap action switch with double break, silver contacts. There is one normally open and one normally closed contact... electrically separated and protected by an oiltight seal. Terminals are easily accessible.



Send for this 8-Page Bulletin

Bulletin 802T is a handy selection guide for picking the limit switch best adapted to your needs. Write for your copy, today.

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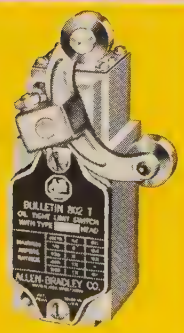


Fork Lever Maintained Contact

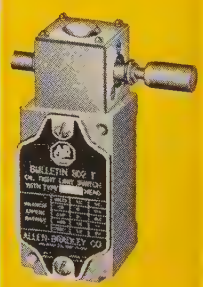
Flush Mounted Fork Lever

Rod Type Spring Return

Top Push Rod Spring Return

Push Roller Spring Return

Side Push Rod Spring Return



Side Push Rod Maintained Contact

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Industry unanimously endorses the idea of planned replacement of capital equipment. Nevertheless, most of America's machine tools are more than 10 years old, sadly inferior to today's profit-producing equipment. The idea is sound — but action is lacking.

Biggest reason for this paradox is financial. Until recently, replacement required a substantial outlay of capital. In many cases, needed capital was lacking; in others, the capital, though available, had many other calls upon it. Unrealistically low depreciation allowances on capital equipment served as an added deterrent to replacement.

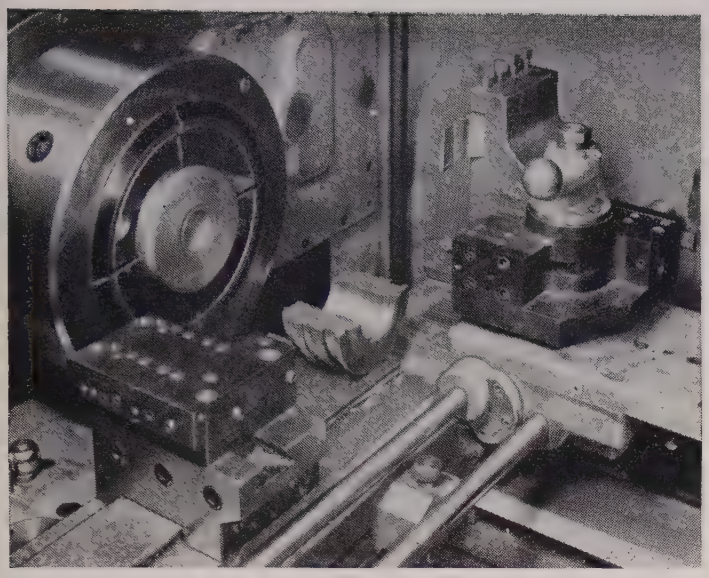
The picture has changed. Now, provisions of our new tax laws permit more equitable write-offs, and make replacement a more attractive proposition.

Jones & Lamson makes replacement even *more* feasible, by clearing away the traditional difficulties of financing with its unique Procurement Plans.

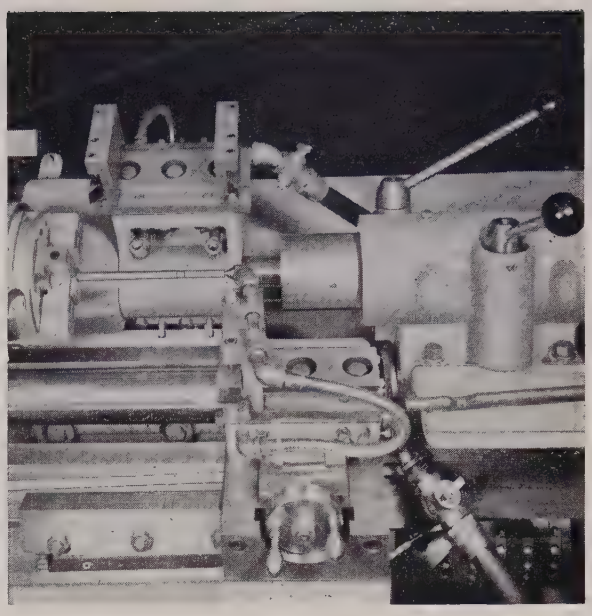
This, then, is what Jones & Lamson offers: modern machine tools that can greatly improve your production; *plus* your choice of several sound, low-cost (interest rates of 3¼%, and lower, add-on) methods of procuring these tools.

◀ **OBSOLETE** machine tools like these hamper industrial growth, keep production low, and costs high.

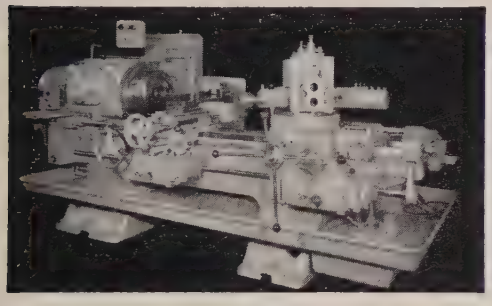
RESEARCH in machining methods, metallurgy, tool geometry, is carried on continually by J & L. Important findings have resulted in the incorporation of unique engineering features in J & L machines.



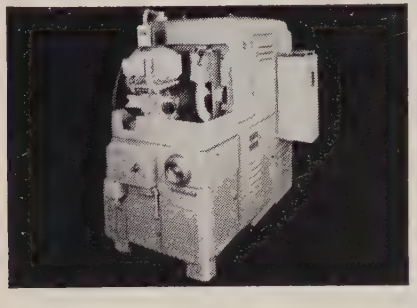
IMPROVED production on this difficult machining job was made possible by J & L engineers' close co-operation with the customer. Research testing, and incorporation of special features on a J & L turret lathe cut time-per-piece on this bottle neck-ring from 14 to 5½ min., increased production 120%!



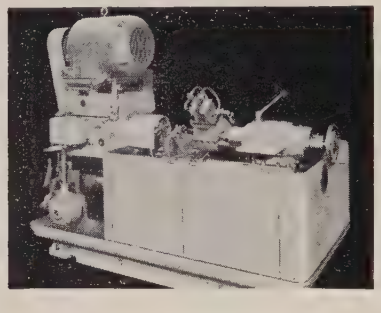
AUTOMATIC OPERATION. One Fay Automatic Lathe replaced eight engine lathes formerly used on this job — and substantially increased production of sewing machine crankshafts at the same time.



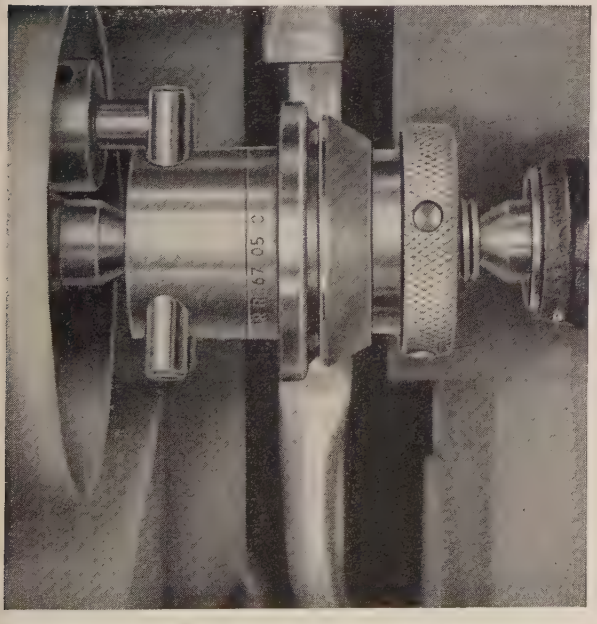
Universal Turret Lathes



Automatic Thread & Form Grinders



Fay Automatic Lathes



GRINDING. This J & L Model "E" Form Grinder, used in producing seaming rolls for the canning industry, completely eliminated a roughing operation, increased production by 100%.

JONES & LAMSON

MACHINE COMPANY

517 Clinton St., Springfield, Vt., U. S. A.

Universal Turret Lathes • Fay Automatic Lathes • Automatic Thread & Form Grinders
Optical Comparators • Automatic Opening Threading Dies & Chasers
Automatic Double-End Milling & Centering Machines

Send today for complete details on J & L's machines, methods and Procurement Plans. Simply fill in the coupon below, clip it to your letterhead *and mail. We'll do the rest.*

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To put these benefits to work, call your Carpenter Representative or your nearby Carpenter Mill-Branch Warehouse, Office or Distributor. THE CARPENTER STEEL CO., 139 W. Bern St., Reading, Pa.

Carpenter STEEL

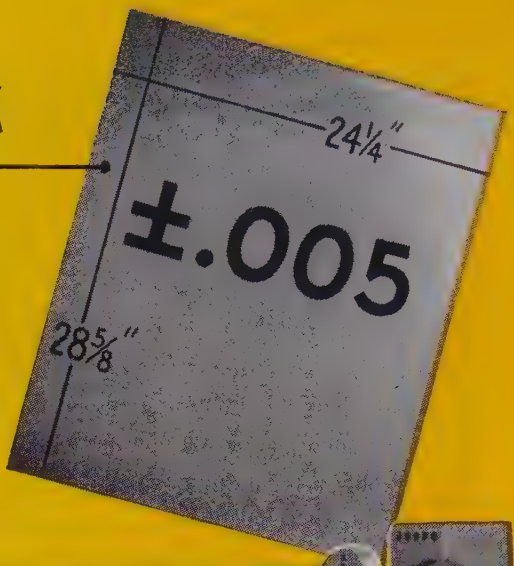
Mill-Branch Warehouse Service

SPECIALTY TOOL • ALLOY and STAINLESS STEELS

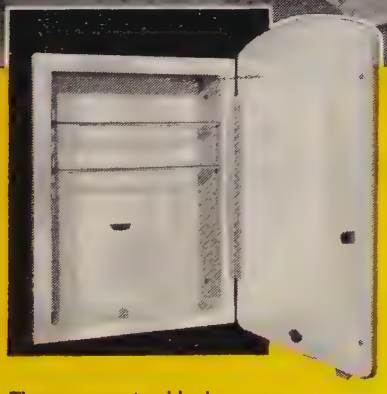
THIS accurate BLANK

saves money

ALL ALONG THE LINE



Photos Courtesy The F. H. Lawson Company



These accurate blanks are held to tolerances of ± .005" on Cincinnati Shears in the shops of The F. H. Lawson Company, manufacturers of medicine cabinets, pails and all sorts of containers.

In lots of 10,000 at 400 an hour these 24½" x 28⅝", 26 gauge blanks are produced with such accuracy that production costs all along the line are low. One and one-half to two million cuts are made before knives need regrinding . . . another important factor in the low cost. Rejects and reworks are very few. Only accurate blanks bring low cost forming and assembly.

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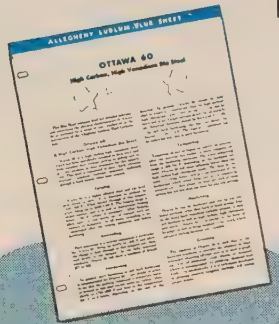
OTTAWA 60

for DRAW DIES is *NEW...and NEWS!*



Write for a copy of the OTTAWA 60 BLUE SHEET

This Blue Sheet contains certified data on the physical characteristics of Ottawa 60, prepared from carefully checked laboratory and field service tests. All the information you'll need on methods of handling and heat treatment, etc.

ADDRESS DEPT. S-64

In fact, this exclusive Allegheny Ludlum-developed die steel is mighty *good* news for any user of draw dies. Ottawa 60 is a high-carbon, high-vanadium analysis, initially designed for the primary purpose of drawing stainless steel.

In that service, Ottawa 60 does just exactly what it was developed to do: it performs without galling or pickup, and shows exceptional wear-resistance—as a long list of successful applications will prove to you. Two of them are illustrated above: a stainless hinge and a stainless sundae server.

But Ottawa 60 is a top performer on any draw die application! Also illustrated above are the two draws on a transformer housing of .037″ gauge SAE 1010 strip. After more than 25,000 pieces—*over 12 times any previous runs*—there was still no sign of pickup, or of wear on the Ottawa 60 punch or die.

This analysis can solve your draw-die problem jobs—or reduce your costs on almost any drawing operation. ● Call on our Mill Service Staff for any assistance. *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.*

For complete **MODERN** Tooling, call

Allegheny Ludlum

W&D 5581

AL® FINE TOOL STEELS SINCE 1854

CALENDAR
OF MEETINGS

Apr. 4-5, Stanford Research Institute and Atomic Industrial Forum: West Coast conference on applied industrial uses of atomic energy, Mark Hopkins hotel, San Francisco. Information: Stanford Research Institute, Stanford, Calif.

Apr. 4-6, National Fluid Power Association: Annual meeting, Broadmoor hotel, Colorado Springs, Colo. Association's address: 1618 Orrington Ave., Evanston, Ill. Executive secretary: Barrett Rogers.

Apr. 11-13, Wire Reinforcement Institute Inc.: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: National Press Bldg., Washington 4, D. C. Managing director: Frank B. Brown.

Apr. 11-16, Concrete Reinforcing Steel Institute: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: 38 S. Dearborn St., Chicago 3, Ill. Managing director: H. C. Delzell.

Apr. 12-13, Bituminous Coal Research Inc.: Annual meeting, William Penn hotel, Pittsburgh. Association's address: 803 Southern Bldg., Washington, D. C. Secretary: C. A. Reed.

Apr. 12-13, Steel Joist Institute: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: 1346 Connecticut Ave. N.W., Washington 6, D. C. Managing director: C. H. Luedeman.

Apr. 12-14, American Gas Association: Sales conference on industrial and commercial gas, Hotel Statler, Boston. Association's address: 420 Lexington Ave., New York 17, N. Y. Secretary: M. A. Combs.

Apr. 13-15, American Society of Lubrication Engineers: Annual meeting and exhibit, Sherman hotel, Chicago. Society's address: 84 E. Randolph St., Chicago 1, Ill. Secretary: W. P. Youngclaus Jr.

Apr. 13-15, Society of the Plastics Industry Inc.: Pacific Coast conference, Palm Springs, Calif. Society's address: 67 W. 44th St., New York 36, N. Y. Executive vice president: William T. Cruse.

Apr. 14-15, Industrial Truck Association: Spring meeting, Drake hotel, Chicago. Association's address: 526 Washington Loan & Trust Bldg., Washington 4, D. C. Managing director: Wm. Van C. Brandt.

Apr. 15, Foundry Equipment Manufacturers Association Inc.: Spring meeting, Sheraton-Carlton hotel, Washington. Association's address: One Thomas Circle, Washington 5, D. C. Executive secretary-treasurer: C. R. Heller.

April 16-17, Packaging Machinery Manufacturers Institute: Spring meeting, Palmer House, Chicago. Institute's address: 342 Madison Ave., New York 17, N. Y. Secretary: Helen L. Stratton.

April 18-20, American Management Association: Packaging conference, Palmer House, Chicago. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president-secretary: James O. Rice.

Apr. 18-20, American Institute of Mining & Metallurgical Engineers: National open hearth conference, Bellevue-Stratford hotel, Philadelphia. Institute's address: 29 W. 39th St., New York 18, N. Y.

Apr. 18-20, Triple Industrial Supply Convention: Cleveland Public Auditorium, Cleveland. Information: Hunter - Thomas Associates, Keith Bldg., Cleveland 15, O.

Apr. 18-21, American Society of Mechanical Engineers: Spring meeting, Lord Baltimore hotel, Baltimore. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

Apr. 18-21, Society of Automotive Engineers Inc.: Aeronautic meeting, production forum and aircraft engineering display, Statler and McAlpin hotels, New York. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: John A. C. Warner.

Apr. 19-20, Material Handling Institute Inc.: Spring meeting, Edgewater Beach hotel, Chicago. Institute's address: 813 Clark Bldg., Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

I've been making tools for wire and ribbon metal forms long enough to know that A. H. Nilson Fourslides are the most adaptable and produce parts most economically. For easy set-up and tool adjustment, accurate feed, and rugged design . . . Nilson Fourslides are my choice.

Look at the part shown on the left . . . made in our Nilson #S-O Fourslide. Better than 5,000 of these are produced per hour *automatically* from coiled stock using .039 dia. tin-plated copper wire, and this tops any previous production method.

I'd suggest you contact Nilson yourself and learn how you can increase production and lower costs with Nilson automatic Fourslides.

Actual Size

A.H. NILSON MACHINE COMPANY

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Automatic Chain Making Machines : Staple Forming Machines : Wire and Stock Reels : Wire Straightening Equipment : Slide Feeds for Presses

Two 60-Ton Mill Type Bedford Cranes work independently or in tandem

Pictured in the foreground above is a 60-ton, 120′ span Bedford Crane with 10-ton auxiliary. The crane in the background on the same runway is an identical twin.

Installed recently in a large eastern steel fabricating plant, both cranes were built to AISE specifications. All controls are of the open panel type mounted in a walk-in steel control house.

Used for handling long span bridge members, the cranes may be operated independently or in tandem to handle loads ranging up to 125 tons.

Experienced steel men know that Bedford Cranes—backed by more than 53 years of crane building and utilization know-how—will deliver consistent top notch performance through the years. They know every advanced design feature of a Bedford Crane will pay off in a safer, smoother, more dependable operation. They know that every Bedford Crane is custom engineered and precision built for its specific application.

You are invited to consult a Bedford Engineer on your next crane problem . . . with all the facts on the table, we believe you too will make your next crane a Bedford . . . available in all types and sizes, from 5 tons to 350 tons and up.

Write for complete catalog

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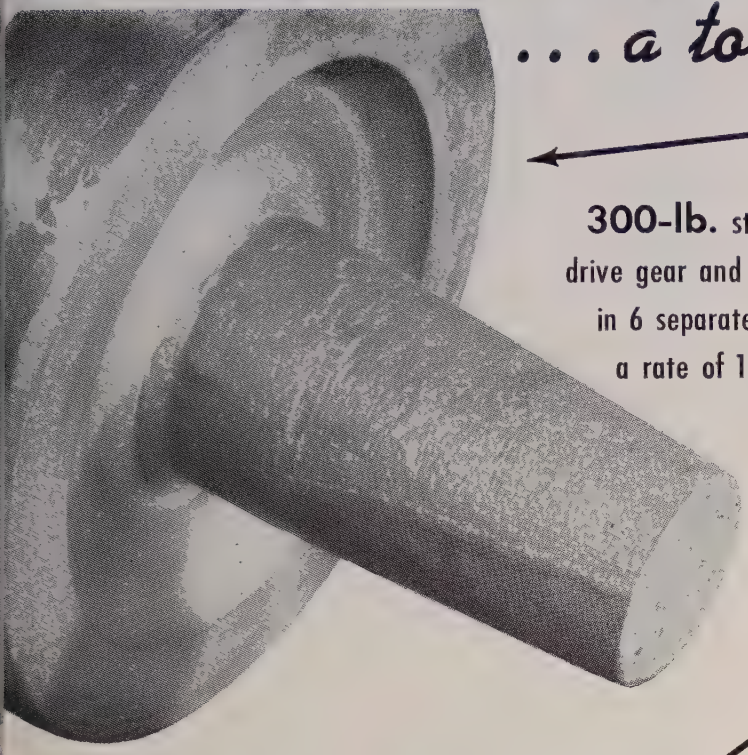
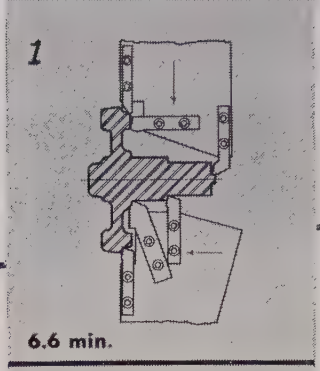
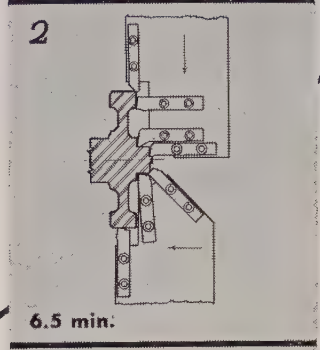
BEDFORD FOUNDRY & MACHINE COMPANY, INC. • BEDFORD, INDIANA

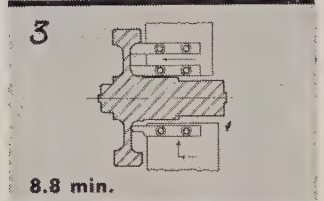
here's A JOB ... a tough one!

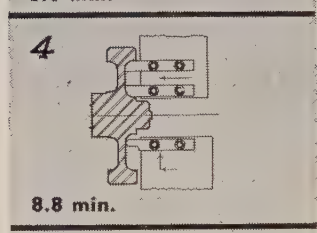


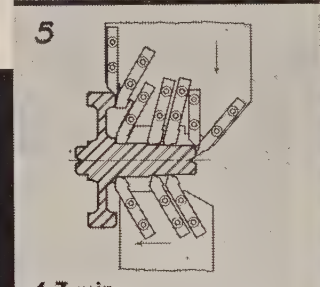
300-lb. steel forging for final drive gear and shaft—machined in 6 separate operations—at a rate of 1 finished piece per hour.

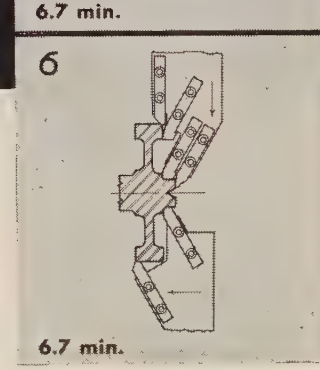




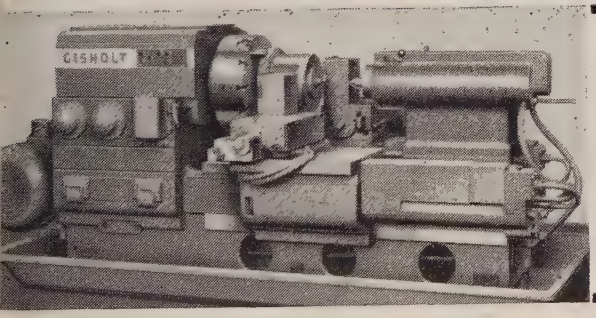








here's THE MACHINE ... that licks it!



GISHOLT
No. 24 Hydraulic Automatic Lathe

Here's how Western Gear Works of Belmont, California, solved their problem:

With two longitudinal carriages and two transverse tool slides, the standard No. 24 machine has the flexibility to combine rapid traverse and feed in several directions. Hydraulic controls make it very simple to change setups.

Now, note how tooling costs were cut by using mounting plates instead of special slotted tool blocks. Large tool bit shanks are slotted, and thus are easily set before final bolting down. The complete riser blocks are quickly interchanged for various operations. And here, again, Gisholt's traditional power and rigidity show up on cuts that pull up to 80 h.p.

For low costs on tough jobs, think first of the Gisholt No. 24 Hydraulic Automatic Lathe. Write for literature.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

THE GISHOLT ROUND TABLE
represents the collective experience of specialists in machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

How safe do you think this pickling chain is?

Look at every link in this chain.

Look for signs of weakness. Look for wear. For corrosion. For stretch. Look closely.

Looks brand new, doesn't it? Yet it has ten tough years of pickling behind it. Ten tough years lifting heavy ship plates, suspending them in hot sulfuric. You can see for yourself that these tough years rest lightly on this chain . . . that it is safe for many more years. Maybe ten. Maybe fifteen.

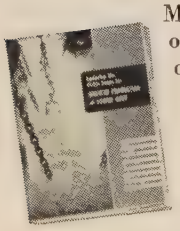
What makes this chain so safe?

Monel®. Monel is unique in its resistance to pickling acids. Particularly when handling irons or steels.

What's more, Monel has as much as 25% more strength than other non-ferrous metals used for pickling equipment. Greater toughness and ductility, too. Long before Monel breaks, you'll see it stretch. Any overload telegraphs its punch.

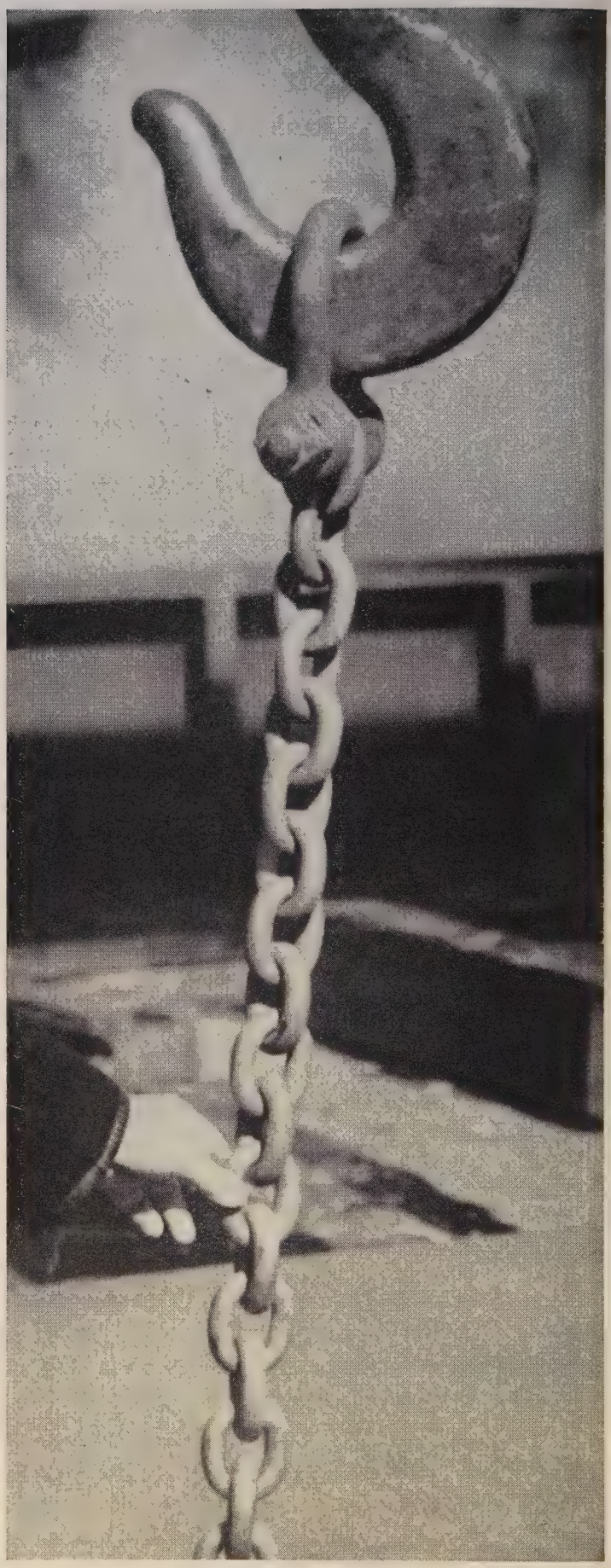
There's no reason why you shouldn't have safe, long-life Monel pickling chains like this. Metal working plants all over the U. S. do. Your distributor of Monel can tell you where to get them.

What about Monel for other pickling jobs?



Monel has proved outstanding for many other types of pickling equipment besides chains. Tie rods, pickling hooks, baskets, for example. You can get the details in a new 32-page Inco booklet, "Equipping the Pickle House for Greater Production at Lower Cost." Write for a copy. It's packed with ideas.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.



for Pickling Equipment . . . INCO TRADE MARK **Monel**

Metalworking Outlook

Test Case on Mergers

Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. want a test case on their proposed merger. They are willing to undergo court action if they can get Justice department assurance of a quick decision. A test of U.S. antimerger policy may also result if Sperry Corp. and Remington Rand Inc. join. Such a union would mean a $650-million company, $200 million larger than International Business Machines Corp.

Titanium Prospects

Excess titanium sponge capacity and increasing production efficiency brought a 55-cent-per-pound drop in the metal's price last week. Titanium Metals Corp. of America's new quotation on sponge is $3.95 a pound. Although Crane Co. expects to be in full production at its new Chattanooga, Tenn., sponge plant by next January, don't expect much additional basic capacity for a while. Emphasis will be on more fabrication facilities to get production balance in the infant industry. Sen. W. Stuart Symington (Dem., Mo.) joins the growing list of congressmen asking questions about Pentagon participation in the metal's development.

More Zirconium Producers?

The Bureau of Mines wants to step out of zirconium sponge production. The move would be in line with the policy of getting the government out of competition with private industry. The bureau is by far the largest producer of the material. Carborundum Metals Co., Titanium Alloy Mfg. Division of National Lead Co. and Foote Mineral Co. are the principal industrial sources for sponge. Significance: New companies may come into the field.

The Decline of a Market?

The American machine tool industry has almost lost its market abroad. From the end of World War I to the beginning of the Korean war, export shipments averaged more than 30 per cent of total deliveries and some years rose as high as 44 per cent. From 1951 through 1953, exports amounted to only 10 per cent of total shipments. Last year, they fell to 8.5 per cent. On the other hand, imports have jumped—from $2 million in 1950 to $48 million in 1952. They have dropped some since, but were still $25 million in 1954.

Tool Policy Recommendations

The Office of Defense Mobilization plans to revise all orders relating to machine tools and production equipment, reveals the annual report of the Senate Small Business Committee. It recommends: Maintenance of a central inventory of government-owned tools; what amounts to a ban on tool leases for nondefense production; withdrawal of U.S. machine tools as soon as possible from production lines of private contractors; review of rental rates for tools; preparation of a preference list establishing pri-

Technical Outlook—p. 77 Market Outlook—p. 125

orities for various military items; a study of the impact of imports on machine tool makers; and a check of control plans.

Hail, the Heat Pump

Watch the heat pump. It's invading northern markets. General Electric Co. is the latest to introduce models designed for colder climates. Utilities such as American Gas & Electric Co. and Atlantic City Electric Co. are pushing the development. Atlantic, which serves southern New Jersey, predicts that one of every ten homes in its area will have year-round electric air conditioning by 1965. Average cost of installation in a $25,000 house in the territory would be $2800 to $3100. Operating cost: An estimated $300 to $320 a year.

Aid for Railroads, Shippers

The administration's long-delayed transportation report carries good news for railroads and shippers. It will recommend: Stripping the Interstate Commerce Commission of much of its power to fix rail freight rates; freeing railroads to go into the trucking and bus businesses; repeal of the 3-per-cent freight transportation tax and the 10-per-cent excise levy on travel tickets; and federal financial aid for research to improve railroad development.

Atomic Notes

Baldwin-Lima-Hamilton Corp. and the Denver & Rio Grande Western Railroad have been awarded a joint contract to study the feasibility of an atomic locomotive . . . Westinghouse Air Brake Co. and Fluor Corp. Ltd. will conduct a joint study on a reactor for the military services . . . Consolidated Edison Co. proposes to build a $55-million nuclear steam generator station in Buchanan, N. Y.

Straws in the Wind

"Within five years 40 per cent of this country's housing market will be taken over by manufacturers of prefabricated homes," predicts John J. O'Brien, retiring president of the Prefabricated Home Manufacturers' Institute . . . In an emergency, the only metal shortages facing the U.S. would be in cobalt and nickel, says Dr. George A. Roberts, president of the American Society for Metals . . . Aluminum Co. of America's 50,000-ton forging press in Cleveland will be in operation by May 5.

This Week in Metalworking

Inventories of industrial components are rising (p. 35) . . . Stampers see a 10-per-cent business improvement in 1955 (p. 36) . . . The United Auto Workers' convention turned into a big pep rally for the annual wage (p. 37) . . . Refractory makers expect a business upturn (p. 38) . . . Why publish a company newspaper? (p. 39) . . . How a product design service pays off for a producer of diecastings (p. 46).

Why Armco **17-4 PH** Stainless Steel **cures distortion problems**

Here's how Armco 17-4 PH Stainless Steel and standard hardenable stainless steel reacted to heat treatment. The three samples at left are all Type 431 stainless steel; the ones at the right are Armco 17-4 PH. Both sets of discs are of the same dimensions, cut from 1¼" diameter bar stock. All have been heat treated to Rockwell C-40 to C-41.

LOW TEMPERATURE DOES IT

The Armco 17-4 PH samples have only a brown heat-tint discoloration—are perfectly flat, typical of what you may expect in your own plant. The reason is that Armco 17-4 PH is a precipitation-hardening stainless steel. The parts were fully hardened by merely holding at 900 F for 1 hour and air-cooling.

On the other hand, the Type 431 samples had to be heated to 1900 F, quenched, then stress-relieved at 600 F. They are scaled and distorted.

2 PRECIPITATION-HARDENING TYPES

If you are confronted with distortion and scaling in hardening stainless steels, Armco 17-4 PH may solve your problem. It is made in billets, bars and wire only.

For unusually high mechanical properties in sheets, strip, plates, and wire, there is a companion grade, Armco 17-7 PH. This grade takes either single or double precipitation-hardening treatment, depending on form and condition.

SEND FOR INFORMATION

For complete information on the Armco Precipitation-Hardening Stainless Steels, just fill out the coupon and mail it to us.

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1095 Curtis Street, Middletown, Ohio
Send me information on your precipitation-hardening stainless steels, Armco 17-4 PH and Armco 17-7 PH.

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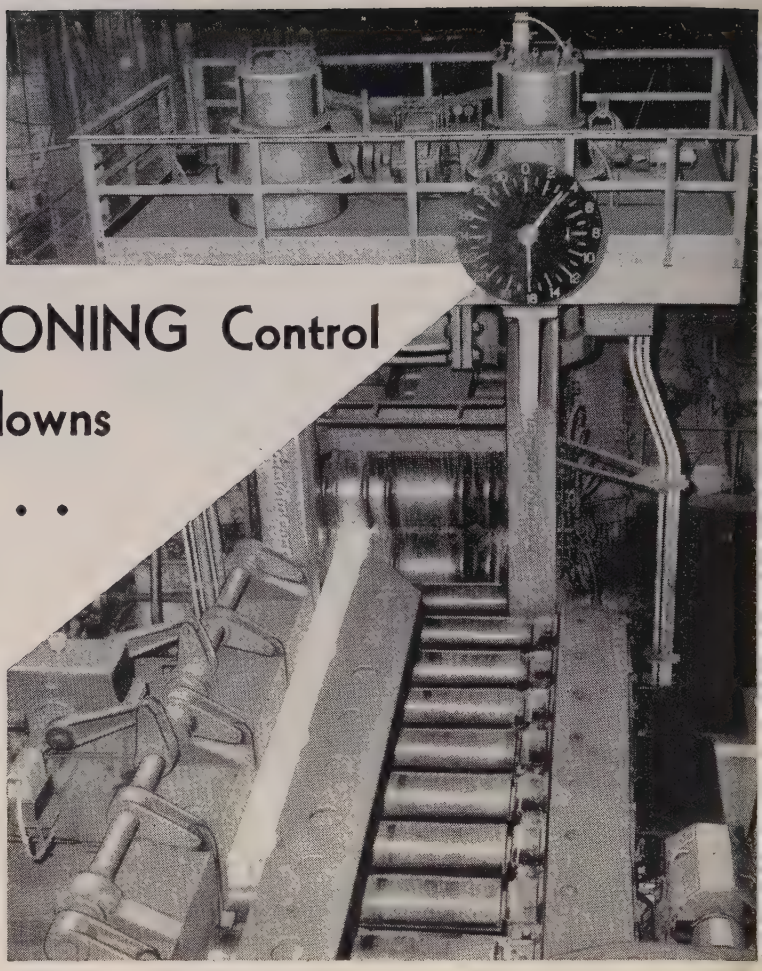
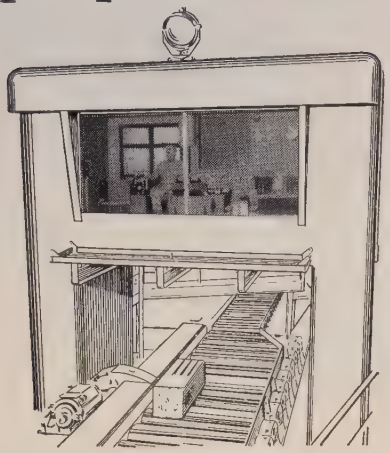
AUTOMATIC-POSITIONING Control

sets blooming mill screwdowns to *pin point* accuracy . . .





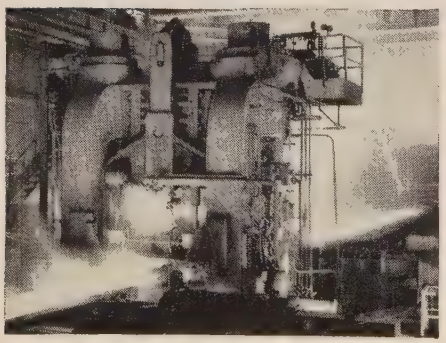
Reduces roller's tasks 1/3

•—•

New operators learn faster

•—•

Accurate drafts reduce rejections



On plate mills and roughing stands, edger rolls and side guide movements can be automatically coordinated with screwdown movements.

Indexes *automatically* from pass to pass to speed rolling and cut costs . . .

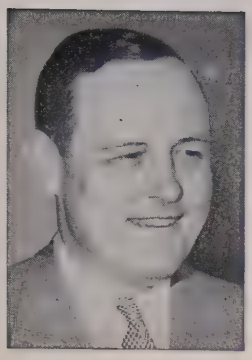
To meet the challenge of ever-increasing costs, rolling mill management-teams are turning to automatic operation of screwdowns and associated drives. Precise roll drafts give a higher quality product and new operators become seasoned in a shorter time. Removing the need to coordinate the screwdown with mill reversal enables the roller to concentrate on the manipulation of main motor and work tables for faster and more efficient operation.

The roller pushes a momentary-button only once for each pass, and the rolls are driven to the exact pre-selected settings . . . no overtravel with subsequent inching into position. The operation is entirely automatic for each complete rolling schedule.

This EC&M Automatic-Positioning Screwdown Control system is readily applied to ferrous and non-ferrous mills. New Booklet 9250 fully describes this control and shows many interesting installations. Write for your copy.

6187

THE ELECTRIC CONTROLLER & MFG. CO.
2698 East 79th St. • Cleveland 4, Ohio



Evolution in Steelmaking

With so many significant technical developments appearing almost daily, one may easily overlook some of the evolutionary advances taking place in steelmaking.

Back in the 1850s when Henry Bessemer was developing his egg-shaped, bottom-blown converter, he probably had no idea that it would contribute so much to the early growth and progress of the nation. Bessemer rails alone did much to link the western and eastern shores of our nation.

But the converter, the predominant method of making steel until 1907, has its weaknesses. It can use little scrap. It requires low-sulphur, low-phosphorous pig iron, which is in diminishing supply.

The process had to give way to the more versatile open-hearth and electric-arc furnaces. But they, too, are not immune to evolution.

The time-consuming reactions in the conventional open-hearth furnace take about 12 hours, just as they did 50 years ago. The small electric furnace, which is charged through a single, side-opening door, is economically confined to the production of alloy and special steels.

Today, the evolution in steelmaking is most apparent. The open hearth, with an enlarged hearth and the use of oxygen and duplexing, is turning out more steel.

The electric furnace, many times larger and equipped for fast top charging, is producing carbon as well as alloy steel competitively with the open hearth.

The old bessemer converter, redesigned and tipped sideways for surface rather than bottom blowing, has reappeared as the promising turbo-hearth.

Newest and most spectacular is the oxygen converter with an opening only at the top. The oxygen is blown down on the surface of the charge of hot metal and scrap to create the refining action. Two plants in commercial production are making heats of high-grade steel in minutes rather than hours.

It is not at all surprising that steel operating men are scrutinizing these evolutionary—perhaps revolutionary—developments intently.

They will result inevitably in lower costs, increased production and higher quality steel products.

Irwin H. Such
EDITOR

VALLEY

INGOT MOULDS

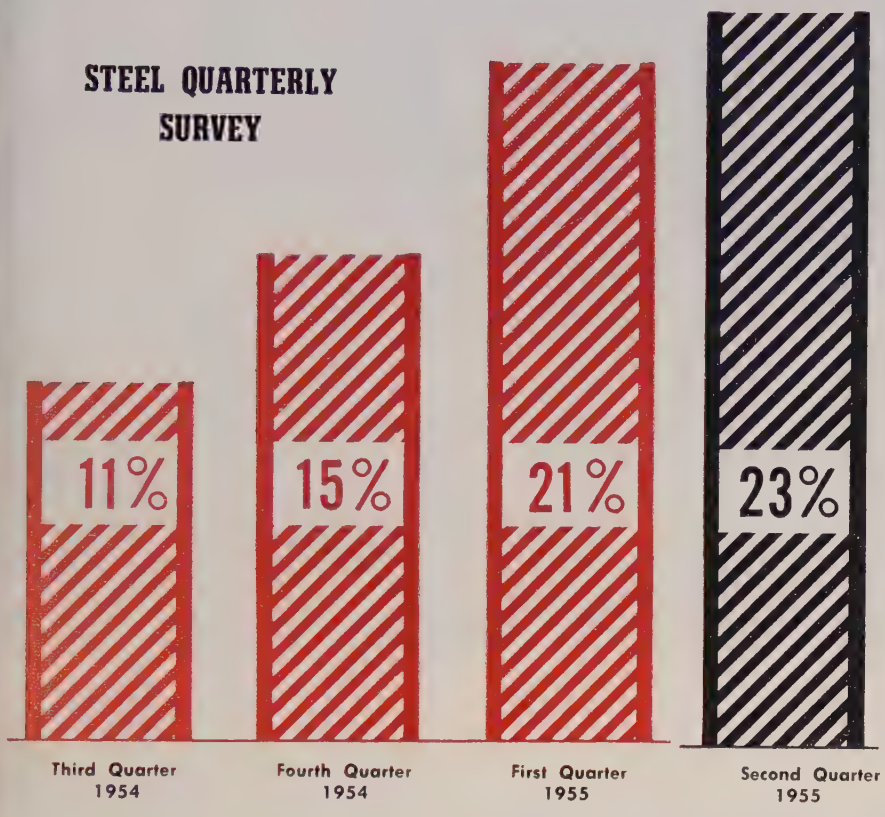
Valley Mould & Iron Corp

General Offices: Hubbard, O.

Western Office: Chicago, Ill. Northern Office: Cleveland, O

Components: Inventories Rising

(% of respondents who report improvement over previous quarter)



Survey includes: Bearings, castings, hose couplings, cylinders, electrical equipment, fasteners, forgings, gears, mechanical rubber goods, screw machine products, springs and wire shapes, stampings, weldments.

More Buying Tightens Deliveries

INVENTORIES have about completed the full circle since the mid-1953 shakeout. After hitting bottom the last two quarters, they are on the way back up.

But the road back is slower and bumpier than the downhill ride, STEEL's latest quarterly survey of industrial components indicates.

Small Gains — In the previous survey, 37 per cent of respondents stated they would like to raise inventories during the first quarter of 1955; only 21 per cent managed to do it.

Of those planning to boost inventories in the coming quarter, about 23 per cent may make the grade. Gains will be small, especially when measured against production.

No Padding—Take what happened in the first quarter. Over 20 per cent of respondents reported higher inventories. Yet the change in inventory position, as measured in days' supply, was hardly noticeable. Increasing production nullified any "cushion" higher stocks may have provided. Well over half of the respondents report inventories of all components are still in the 10-to-60-day bracket.

Pointing this up: A larger number report poorer inventory positions in spite of higher stocks.

Slower Service—For the first time in about a year, the number of respondents reporting delivery troubles has risen considerably. Some 47 per cent say they are having difficulty getting one or more components. Over 10 per cent say deliveries from their suppliers as a group are not adequate; in the two previous surveys, only 2 per cent were dissatisfied.

Some of the difficulty can be traced to inventories which were too low to handle last fall's upturn in business. With a goodly number of firms trying to sustain rising production and concurrently build up inventories, longer delivery time resulted.

As Needed — Some purchasing agents accept the inconvenience of lengthening deliveries as a likely companion to low inventories. As one put it: "We are still buying as needed only—no scare buying or speculating. Lead time can lengthen and cause delivery problems momentarily."

Longer lead times are taken as a good sign by some. One PA says: "Deliveries on most items have moved back somewhat, indicating that business is improving."

Getting Better — In spite of higher production and "hard-to-gets," consumers gradually are getting inventories where they want them. In the latest survey, 65 per cent of respondents think their inventory status will still be in good shape three months from now. A quarter ago, only 60 per cent thought that way; six months ago, only 47 per cent.

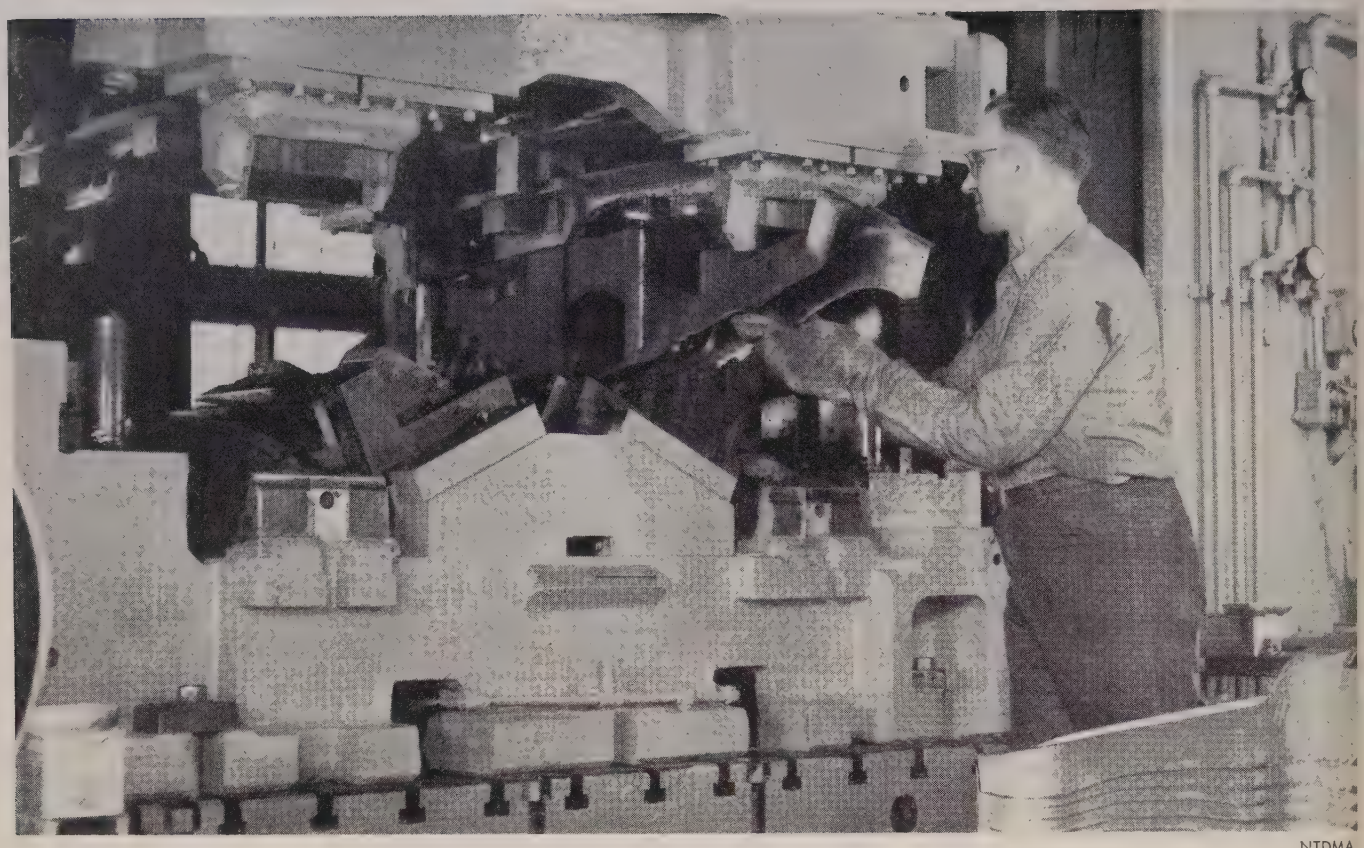
Major trouble spots in deliveries seem to be the longer lead-time items, such as forgings and malleable and steel castings. Aggravating the problem is the generally low level of inventories. Also giving some difficulty are certain kinds of electrical items, antifriction bearings and springs and wire shapes.

J&L: New Pilot Plant

Jones & Laughlin Steel Corp. is successfully operating a pilot plant to concentrate low grade Michigan iron ore.

Hematite rock, containing about 30 per cent iron, has been upgraded to a concentrate containing up to 63-per-cent iron.

The laboratory-scale plant at Negaunee, Mich., is believed by J&L to be the first to demonstrate that nonmagnetic ores can be magnetized for simple concentration.



NTDMA

Competition is intense, but outlook is bright for . . .

Stamping Sales: Up 10% in '55

STAMPERS are pressing for a 10 per cent increase over last year's sales.

Seth G. Atwood, of Atwood Vacuum Machine Co., keynotes the industry's optimism when he says: "The increase is based on an assumption that 1955 automotive production will be approximately 10 per cent higher than in 1954."

How To Gain—Many producers are spreading their base of operations. Worcester Pressed Steel Co. points out that its major stamping customers are in a wide range of fields including: Office equipment, electronics, air conditioning, aircraft and home appliances. Detroit Stamping Co. has diversified sales so that it will not be either way up or way down with any particular segment of industry. Its major buyers are in scattered markets — automotive, refrigeration and appliances, agricultural implements, interior hardware and electrical equipment.

Captive Shop—Other routes to greater sales are being taken. Acklin Stamping Co. is a wholly owned division of Tecumseh Products Co. About 75 per cent of its production is directly for Tecumseh, but it also serves automobile and accessory companies and producers of home workshop tools. While Acklin is considered a captive shop, it still maintains its individual identity to fill the remaining 25 per cent of its production schedule.

Speaking of captive vs. job shops, S. Morrison, president, Morrison Products Inc., says: "The deciding factor generally relates to volume, with the job shop still much in the picture where specialized facilities can be utilized over relatively small volume to satisfy requirements for a specific component."

Stamping Backlog—One of the positive indications of how 1955 will go for stampers is shown in their present backlog status, which is running between two and a half and three months. Norman Thal, president, Inshield Die & Stamping Co., says: "At the present time we are running two 9-hour shifts, six days a week. Unless our present backlog is drastically reduced, we expect to continue on this schedule for at least the next two months. We expect to have a busy summer and fall, barring any unforeseen change."

Inshield's business is 60 per cent automotive, 40 per cent nonautomotive. While all stampers cannot say that they will run two shifts, most of them can report: "Backlogs are good, and they may get better."

Defense Business—Average figure for defense work in stampers' shops is about 8 per cent, with wide variance among individual producers. Two firms report that 30 and 20 per cent of their production is for defense, while others give figures from zero to 10 per cent. Most firms are not depending on defense business to boost sales in 1955. They are attempting to get new customers to replace the loss of a former best customer—the Department of Defense. This is also adding to the competitive atmosphere.

Autoworker leaders whip up enthusiasm with . . .

Rah, Rah, Rah for GAW

THE 15th Constitutional Convention of the United Auto Workers-CIO turned out to be nothing more than a giant pep rally for the Guaranteed Annual Wage (GAW).

Timing was carefully calculated. By holding the convention in Cleveland's Public Auditorium from Mar. 27 to Apr. 1, union strategists allowed only six days between "whipping-up" sessions and initial collective bargaining negotiations with General Motors Corp. on Apr. 7.

Crux — The UAW-CIO Resolutions Committee Report contained the union's basic argument for GAW: "From the social and economic point of view, guaranteed employment is a demand that management take seriously its responsibility to minimize unemployment and its damaging effects . . . it provides powerful incentives to those corporations to plan and schedule their production so as to minimize and avoid layoffs and short work weeks . . ."

Unity of Purpose—Introducing George Meany, president, American Federation of Labor, on the second day of the convention, Mr. Reuther stated: "This is a great moment for American labor."

As Mr. Meany was led to the rostrum, UAW-CIO delegates rose as one man to greet their new found supporter. Mr. Meany's opening remarks set the tempo: "Just as men join as workers, so it is necessary that unions now join together to insure progress."

Bright Note—Referring to automation, the AFL president said: "The united labor movement is willing to accept the advancement of mechanical science so long as all benefit."

Delegates waited for George Meany to come out strongly for GAW. He didn't. When interviewed, Mr. Meany said that GAW was a UAW crusade, "the autoworker's baby." He did say that he was for GAW personally but felt unqualified to be involved in autoworker negotiations.

Mr. Meany also admitted that GAW will not work in some industries. When questioned about financial support from AFL funds if the UAW is forced to strike, he stated that if the UAW requests funds it will receive them. Convention delegates had already pledged stiffer dues ($5) to help build a $25-million strike fund.

Convention Thinking — There was a hint that the union might accept a watered-down agreement. Mr. Reuther commented: "Despite our confidence in the plan and the firm belief it is one under which our industries could operate without difficulty, we are prepared to give earnest consideration to any other guaranteed employment plan that industry or anyone else has to offer as better or more practical."

The resolutions committee report also stated: "There is no reason on earth that this issue cannot be settled rationally and peacefully if management comes to the bargaining table prepared to discuss not whether (GAW), but how (GAW)."

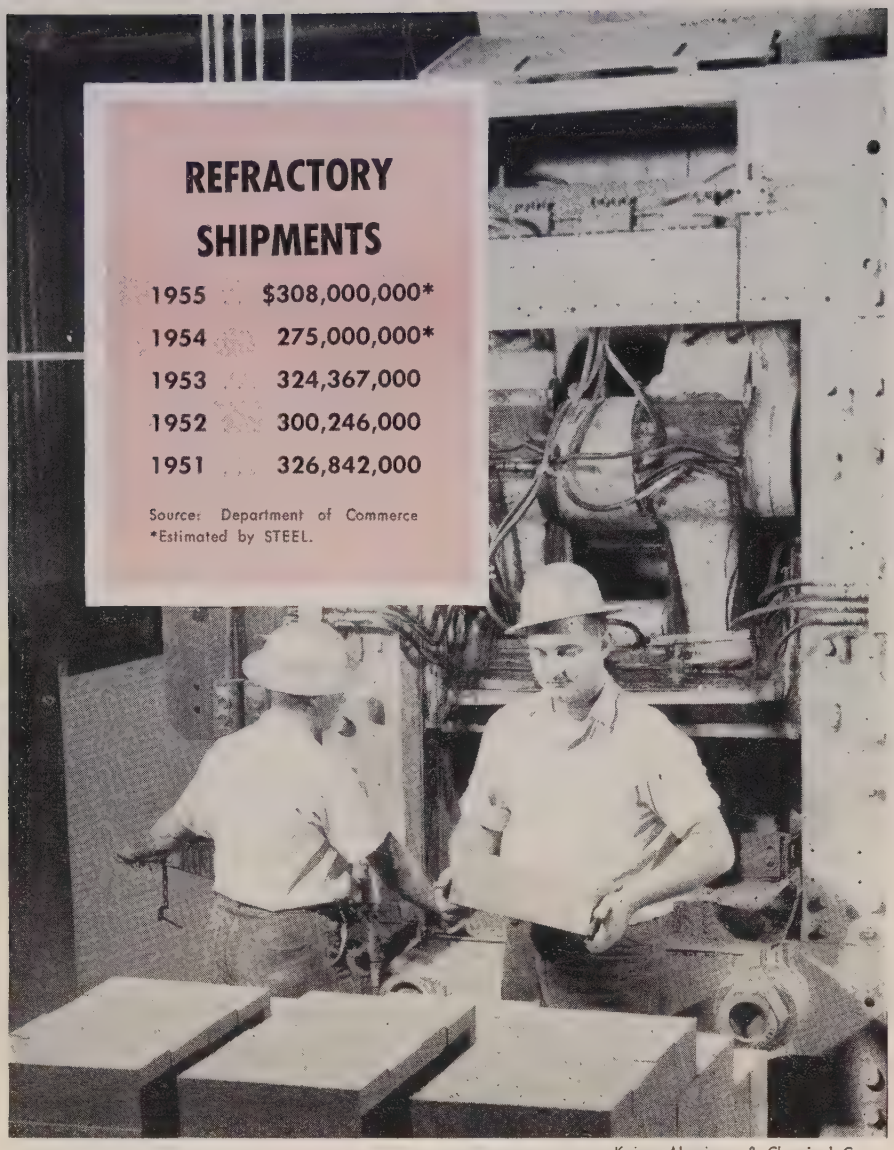
Now the stage is set for the most crucial labor battle of 1955, and one of the most important of all time. The participants are primed.

Automation in Warehouses

Walter Kidde Constructors Inc. has built a new automated warehousing system for Link-Belt Co. at Colmar, Pa.

The bulk picking method is facilitated with a conveyor system directed by electronic controls. It provides a platform on which pickers can place and segregate a requested item, together with the consignee's address, which is contained on a tabulating card. It's designed for large manufacturers and others who must warehouse and distribute case and broken lots of a wide variety of products.

"I am an optimist by nature," states Walter Reuther. "I think our case is so good and right that we cannot help but win. The union is prepared to fight for GAW, but we shall move heaven and earth to avert a strike"



Kaiser Aluminum & Chemical Corp.

Increase in capacity several years ago comes in handy as . . .

Demand Heats Up Refractory Sales

REFRACTORY makers figure on a strong comeback in 1955. Demand, most producers say, has paralleled the upturn in steelmaking, which consumes roughly 70 per cent of their output.

Others say business is up, but not so much as steel. "Our better business," says R. P. Stevens, Chicago Fire Brick Co., "is due chiefly to product development and expansion of markets."

Good Supply—One thing is definite: Demand is good. Foundries, weak last year, are coming back strongly to add energy to the market, says Harbison-Walker Refractories Co., Pittsburgh.

Customers want quick delivery, but standard refractories are in good supply. "We can ship practically as soon as we get an order," says Harvey N. Barrett, vice president, Basic Refractories Inc., Cleveland.

Tightness—Pouring pit refractories—sleeves, nozzles and runners—are hardest to get. "We quote eight-week delivery, the longest in a year and a half," says Haws Refractory Co., Johnstown, Pa. Some tightness is noticed in silica brick.

Mill inventories of refractories are being kept down even if it sometimes means trouble. One reason is that shipping direct to the mill saves warehouse handling expense—up to $4 or $5 on 1000 bricks. Mill stocks have increased somewhat in recent months, though, says McLain Fire Brick Co., Pittsburgh.

Distribution—Pointing up the important role of distribution: Kaiser Aluminum & Chemical Corp. is building a new refractory plant at Columbiana, O. "The new plant is expected to shorten deliveries of basic refractory brick as much as 14 days," says Vice President Frank M. Cashin, who is manager of the Chemicals Division.

As far as trends go, basic brick is still a comer. But increasing use of refractory castables in lieu of fire brick products is the outstanding change within the past year or so, says Babcock & Wilcox Co., New York. Ease of installation with unskilled labor is a big reason for their growing popularity.

Inventory—That holds true for plastic refractories, too. Another factor is that lower inventories can be carried because of the elimination of many prefired special shapes, points out George V. Campbell, vice president, Ramtite Co., Chicago. Soaking pit coping is but one place where plastics are coming into greater use. If ingots strike the coping, plastic refractory just scores, while prefired coping tile breaks out in pieces, says Mr. Campbell.

Chemically bonded brick, steel-encased brick, low alumina and silica brick also are gaining in use, believes E. M. Thorpe, manager of sales, General Refractories Co., Philadelphia.

Comeback — Carbon refractories were the rage some years ago. Often not used to best advantage, they got a black eye. Now they're coming back, according to Union Carbide & Carbon Corp.

High temperature refractories weren't too much affected by the steel slowdown last year, says Norton Co., Worcester, Mass., partly because of increasing use of hotter processes. More growth is expected.

In ladle brick, demand is leaning to use of larger brick, says Winston A. Porter, president, Globe Brick Co., East Liverpool, O. Larger ladles, longer life and quicker lining are factors in the trend.

House Organs Make Harmony

An Ohio manufacturer is being forced to move, plans to pull up stakes in September. Some employees will be out of a job, loss of payroll will hit community hard

HERE'S a job for the company publication. Although management will still have to make personal explanations to the workers and the community, a black-and-white statement of its motives is the only way to avoid complete distortion of the facts.

There's a growing record of the value of company publications to management in dollars and cents. So far, a study by the International Council of Industrial Editors has turned up more than 100 case histories. Automation is one topic that's in the company news right now, with papers doing a good job of getting the fact across that it's a beneficial necessity, not an ogre.

Bonus—W. D. Martin, editor of Republic Steel Corp's *Republic Reports,* says that after the stage had been set by a special issue, a drive sold more than 97 per cent of all company employees on starting a bond program. Henry B. Bachrach, General Electric Co., Schenectady, N. Y., reports that a weekly paper does most of the promotion of GE's area suggestion system. "Last year," he says, "we saved better than $1 million."

Management is spending about $140 million a year on newspapers, magazines and other written material aimed mainly at employees. Since 1947, the audience has grown some 25 million to a total of 80 million.

Backing — Many organizations are doing a full-time job to increase the impact of the message. The American Iron & Steel Institute, for example, maintains two full-time men in New York to advise member company publications. It has qualified trouble shooters in district offices, and conducts a year-around program with regular meetings and panels.

Your Publication — The scope of your written communcations program will be governed only by your budget and the amount of company information you want to spread. Authorities agree that, at the least, you should have a mimeographed employee newsletter.

If you want full coverage, you could put out a monthly magazine, weekly supervisory and employee newsletters and a monthly community news page. Employee magazines are the basic tool for developing harmony between employee and company. Newsletters are strong for spot situations, like spiking rumors.

Your Costs—They will vary, depending on size, printing methods, use of color, etc. An AISI survey shows that written communications in the steel industry cost from a few to forty cents a copy. A survey of 15 companies by Associated Industries of Cleveland shows an average cost of 26.7 cents for newspapers, 31.7 cents for magazines. The AISI estimates that an eight-page monthly with 5000 circulation can be put out for about $4000 a year, excluding salary costs.

And that's the rub. There are always a lot of new faces at meetings of industrial editors. Too many young men see editorship of a company paper as a steppingstone; too many managements fail to get value for the dollars they put into ink and paper because they don't pay enough to attract a man capable of giving life to the body.

Responsibility—W. W. Sebald, president, Armco Steel Corp., remarks that more management emphasis must be placed on human relations. "Each employee must be given the sense that he is 'in the know,' that he belongs; that he's doing an important job." Your company publications are the best vehicles for achieving these aims.

• *Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department,* STEEL, *Penton Building, Cleveland 13, Ohio.*

WHAT YOUR COMPANY PAPER SHOULD DO

- **Provide employees with a better understanding of their company**
- **Help make new men at home and happy**
- **Help maintain production by reducing accidents, absenteeism**
- **Explain clearly the economic benefits of working for the company**
- **Dramatize the importance of the employee's job**
- **Spike morale-crippling rumors**
- **Help build harmony between management and the men in the plant**
- **Emphasize the company role as a good community citizen**
- **Add strength and conviction to American competitive enterprise**

Machining Goes Electronic

Convair is building an electronically controlled milling machine. Magnetic tape will control the unit's four cutting heads, its bed and turntable

ELECTRONIC DIRECTION of a 200-ton milling machine will save $50,000 or more on tooling for one part. Savings in lead time ranging from 15 to 85 per cent are expected. Important savings in materials are possible, too.

So states Convair Division, General Dynamics Corp., San Diego, Calif. It will develop the milling machine under a $1,128,000 Air Force contract. Completion is scheduled in 18 months.

Versatile—Capable of making 18 selective motions, the machine will have a 20-ft bed with 10-ft clearance, a rotary turntable, two vertical cutting heads and two horizontal heads.

Control of the machine is given by commands translated onto magnetic tape and run through an electronic director. The commands are first read from engineering data fed into a computer.

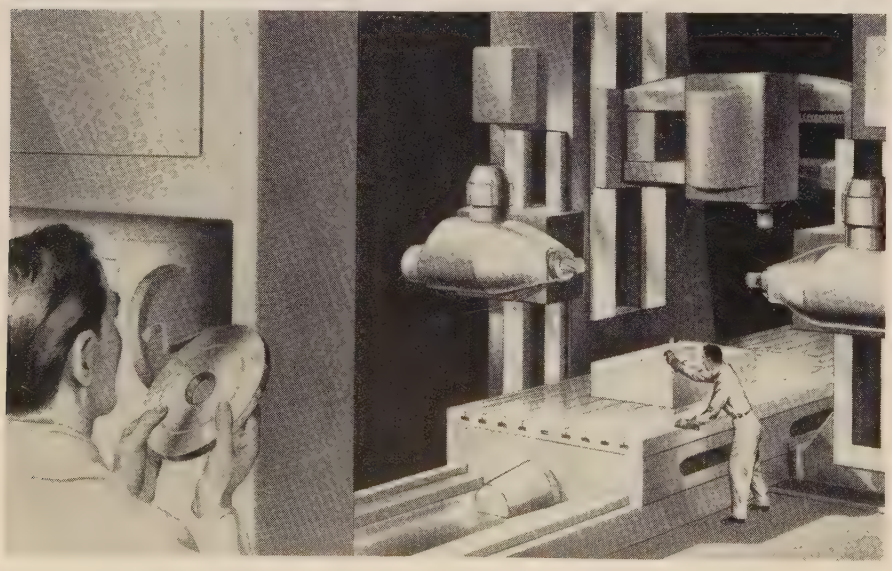
By the Number—First step is to code engineering dimensions and formulas from drawings. Convair is developing these codes. Once coded, the computer will transcribe the numerical information onto punched tape. When it is fed into the electronic director, the information — the actual commands to the machine — is transferred to magnetic tape. The tape or director may operate the machine.

In emergencies, duplicate magnetic tapes could start or convert production on machines electronically equipped in a few hours. The system is applicable to many different types of machines, including rolling mills, stretch presses and special-purpose profiling machines.

PA's Look Ahead

The National Association of Purchasing Agents is joining the ranks of those predicting better business for 1955. More than the normal seasonal pickup is reflected in its latest report, which shows 53 per cent of committee members with increased new orders, 50 per cent who are increasing production.

Further evidences of business vitality: Boosted capital expenditure programs are reported by 9 per cent; employment picture reported better by 32 per cent; more forward buying, with the big concentration in the 60-day range. Reports put aluminum, copper, galvanized steel sheets, plates, nickel, selenium and titanium dioxide on the short-supply list.



Artist's conception of an electronically controlled milling machine shows a 20-ft bed with 10-ft clearance. Cutting angles of the tools may be varied. Both vertical heads or both horizontal heads can be operated at once

Railroads Buy Cars

Study of new passenger cars results in orders for Budd and Pullman-Standard

THE PURCHASE of three, low-gravity, lightweight passenger trains may be the spring tonic railroad buying needs.

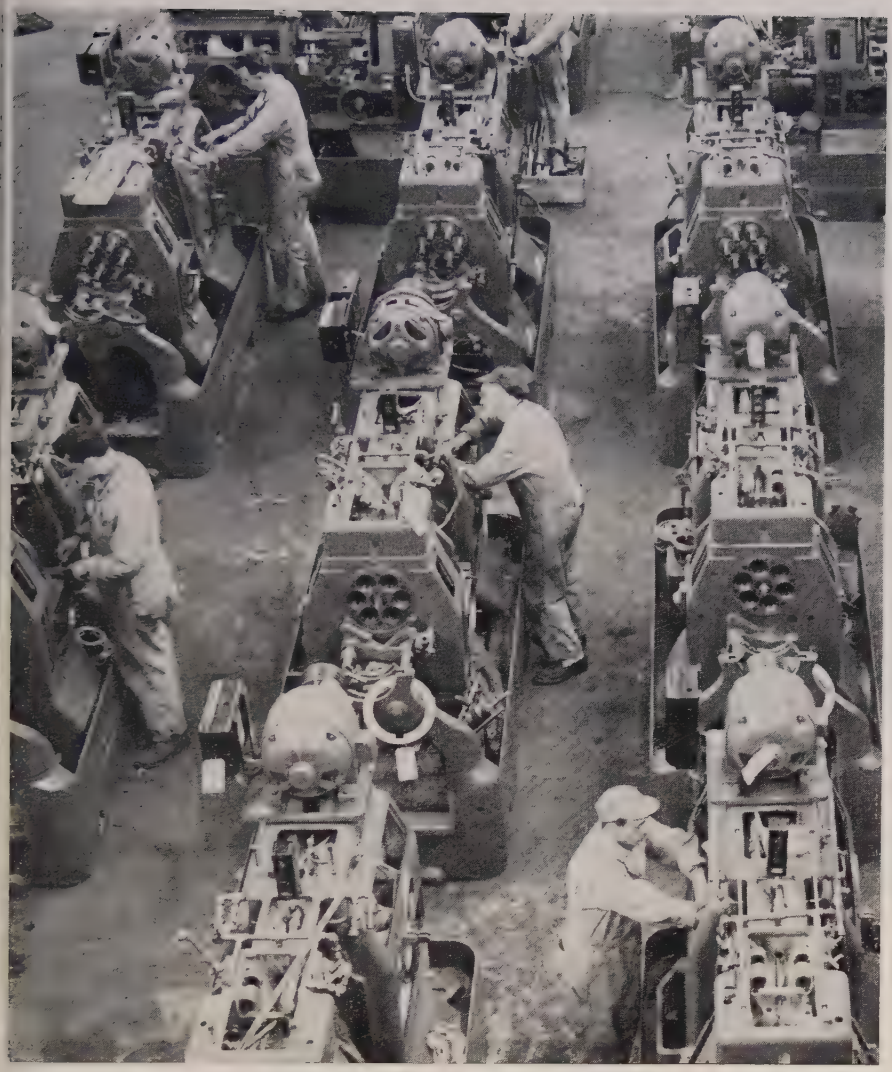
The Pennsylvania Railroad bought one of the trains—a seven-car unit, plus a power car—and the New York Central and New Haven Railroads ordered the other two—both five-car units, plus diesel locomotives.

Add Stanta Fe—To this must be added the recent order of the Santa Fe Railroad for 47, high-level passenger cars. Two other railroads, the Chesapeake & Ohio and the Baltimore & Ohio, have been studying new coach design but have not placed orders.

The Pennsylvania and Santa Fe placed orders with Budd Co., Philadelphia. These cars will be made of steel. The New York Central and the New Haven cars are to be built by Pullman-Standard Car Mfg. Co., Chicago. Locomotives will be produced by Baldwin-Lima-Hamilton Corp.

Specifications—James M. Symes, president, Pennsylvania Railroad, estimates that the new Pennsy train will cut running time 15 per cent or more as well as increase passenger comfort. The cars ride on 4-wheel trucks situated under each end. Only 11¾-ft high, the cars are almost 2 ft lower than standard models. Length remains unchanged at 85 ft, but the weight of each car is about 40 per cent less than standard ones.

Santa Fe's cars are 2 ft higher than existing cars and are similar in appearance outside. Inside, the cars are divided into two levels. The top level seats 85 passengers, underneath are vestibules, lavatories, heating and air conditioning units.



Simmons Machine Tool Corp.

Look for more U.S. machinery work like this because . . .

Vance Tool Jobs To Be Let Soon

LOOK FOR the government to set up a continuing program of machine tool purchases to build up defense capacity and replace obsolete equipment.

At the spring meeting of the American Machine Tool Distributors Association, James C. Kelley, general manager, said that first orders under the $100-million Vance plan appropriation would start dribbling in over the next couple of months. Thirty to forty per cent will be placed by June, the remainder by the end of the year.

First Step—R. A. Vidinghoff, association president, said that the expenditure of Vance-plan money is only the first step. There probably will be similar funds for subsequent years.

He said the Navy has instituted a far-reaching facts-and-figures survey to find out what it costs to use obsolete equipment in comparison with new machines. Savings in production costs and manpower will be used as the basis for requesting funds. Other defense departments probably will follow this pattern.

Replacement Market—These replacement programs stand a good chance of being approved but are still some time off, Mr. Vidinghoff said. Meanwhile, machine tool distributors are going after the replacement market. Sales through distributors are at a better clip, and he thinks this momentum can be maintained up to machine tool show time in September.

New machines are appearing ahead of the show, and the more liberal attitude toward depreciation provides a real incentive for customers to modernize, he said.

Cut Costs with Improved Safety

A reduction of 10 per cent in your accident rate represents an annual saving of about $1250 for each 100 employees. That's equal to a 6 per cent return on $20,000.

Those figures were presented to American Management Association members at last week's manufacturing conference in Chicago by Thomas J. Berk, safety consultant with Metropolitan Life Insurance Co. Occupational accidents alone cost the nation's business economy over $3 billion, he pointed out.

Some of the cost factors: Direct charges to employer in compensation payments, medical expenses and insurance premiums; indirect costs, including lost time by victim, his supervisor and other employees involved, plus economic losses owing to the employee's absence and the employment and training of a replacement.

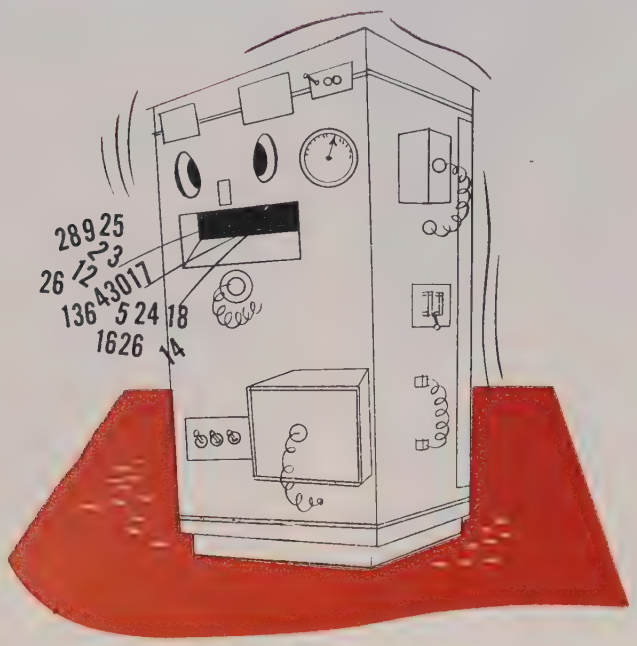
It has been estimated, Mr. Berk said, that indirect costs average four times greater than direct costs.

An effective system of accident reporting and frequent, competent analysis of records are necessary in the development of worth-while safety programs, he pointed out. Since organized accident prevention began in this country, a 40-per-cent reduction in the rate of disabling injuries has been reported between the 1935-1939 period and 1953.

$300 Million Pay Check

Republic Steel Corp. paid its employees over $300 million in 1954. Included in the breakdown are wages and salaries, pensions, social security and insurance.

Wage and salary payments in 1954 totaled $274 million, compared with $50 million in 1930, Republic's first year of operation. Average weekly earnings were $94.22 in 1954; in 1930 earnings were $27.53. The record year was 1953, when wages and salaries totaled $347 million. Average weekly earnings were $98.55.



Better U.S. Statistics Coming

LOOK FOR improvement in government statistics, although betterment may be some time in coming.

The President set the tone when he said in his budget message: "We do not have all the statistical information required in our dynamic economy. I recommend a government-wide effort to improve statistics."

Where?—At least three groups are working on the problem: The Chamber of Commerce's Committee on Business Statistics, the Bureau of the Budget's Advisory Council on Federal Reports; and the Joint Committee on the Economic Report's Subcommittee on Economic Statistics.

What do they recommend? The chamber advises more concentration on employment, unemployment, wage, price, construction, housing, population and national income figures, with particular emphasis on unemployment. It points out that present jobless data do not tell where the unemployed are, or reveal their usual or previous occupations. It also calls for a series on value added by distribution, similar to the present one on value added by manufacture.

Misleading — The Budget Bureau's advisory council criticizes past census taking of manufacturers. For example: The 1947 census showed 68 establishments producing nails and spikes, with shipments valued at $30,038,000. The unwary would never realize that less than 20 per cent of total U.S. shipments were represented—$100 million worth of nails and spikes were produced as secondary products by other producers, chiefly steel mills.

The congressional subcommittee to study the matter is just now getting re-established. The new chairman will be Rep. Richard Bolling (Dem., Mo.). Under Republican control of Congress, the chairman was Rep. Henry O. Talle (Rep., Iowa).

Consent Decree

A unique consent agreement has been negotiated by a Federal Trade Commission hearing examiner and five makers of steel drums.

While the whole thing could be upset when reviewed by the FTC, the decree commits the commission not to conclude that uniformity of prices by itself constitutes evidence of price fixing. It also promises to follow the basing point rules laid down by the Supreme Court in the Cement Institute case, rather than those in some of the later and more controversial cases. Finally, it bars any attempt to conclude that individual use of basing points, or other form of delivered pricing, constitutes a violation of the order.

The decree is unique because for the first time the FTC puts in writing its stand on basing points and the long smoldering battle over "conscious parallelism of action" in pricing.

The steel drummakers involved —Inland Steel Co., Jones & Laughlin Steel Corp., Republic Steel Corp., Rheem Mfg. Co. and U.S. Steel Corp.—agree not to fix prices.

Pentagon Patter

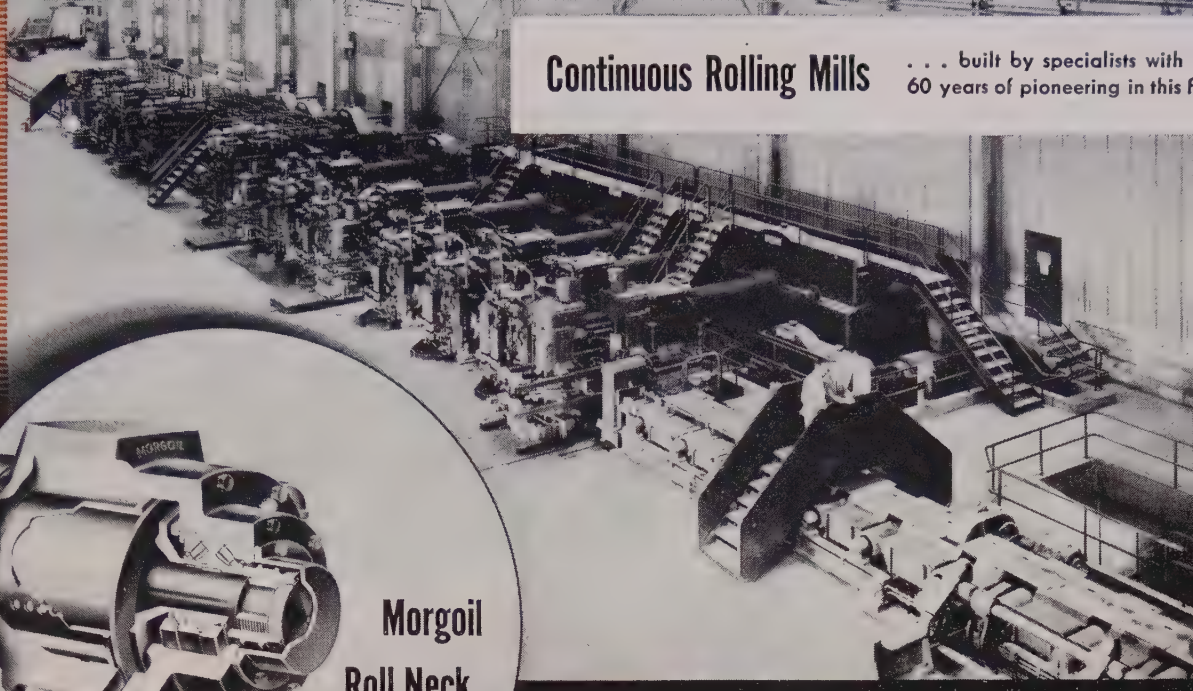
The Air Force will start manufacturing methods projects. Objectives: To insure quality-quantity production to meet requirements for components or end items; to reduce unit production costs; to improve fabricating efficiency; and to improve product reliability, particularly of electronic components.

Look for a Defense department investigation of the amounts of military production concentrated in places like Cleveland. Who sparked the idea? Arthur Godfrey. In one of his morning programs he remarked that an H-bomb attack on Cleveland would stop all aircraft production for months. Reporters picked that up, queried Defense Secretary Charles Wilson. Result: He promised to look into the matter.

Steel Marking

Look for early approval of a marking system for selected military iron and steel products. The draft proposal is in the hands of steel producers. Their comments will be completed by about mid-April.

Some minor changes can be expected, resulting from either industry or military suggestions, but substantial agreement already has been reached on general phases of the plan.



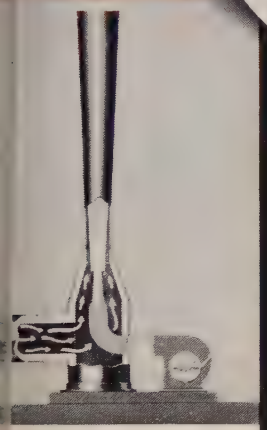
Continuous Rolling Mills . . . built by specialists with 60 years of pioneering in this f

Morgoil Roll Neck Bearings

. . . will increase the accuracy of your product and save on operating and maintenance costs.

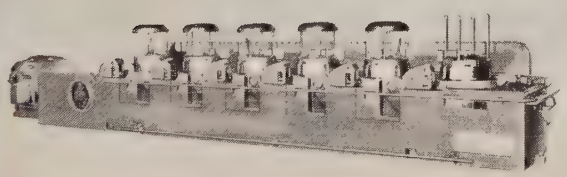
MORGAN WORCESTER

Can help you produce more and better steel products

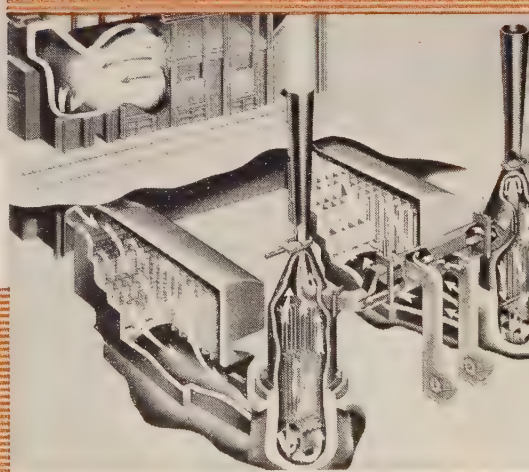


organ Ejectors

ficiently handle hot gases mes as high as 3000° F.



Wire Machines . . . Morgan-Connors give high production, with low die cost, low power cost, low space requirement.



Furnace Control System

. . . Morgan-Isley increases efficiency of any regenerative furnace at relatively low installed cost.

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Regenerative Furnace Control - Ejectors - Gas Producers

English Representative
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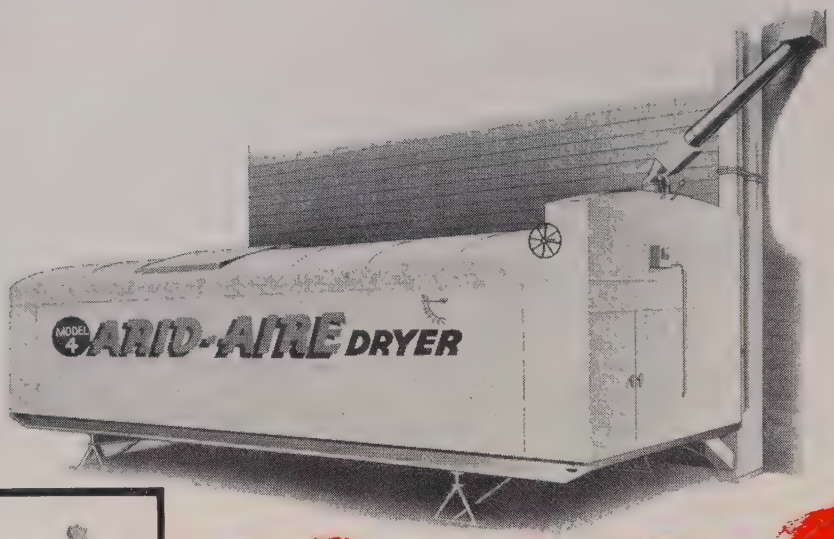
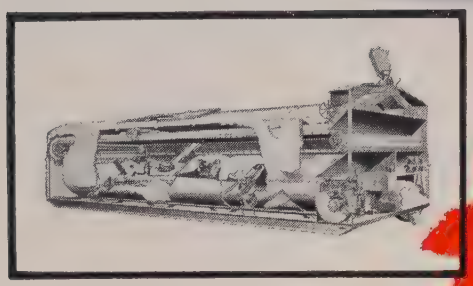
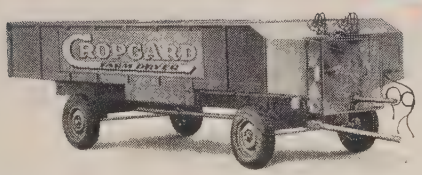


Photos, courtesy of Arid-Aire Manufacturing Co., Minneapolis, Minn.





Beats the Heat!

How the House of Stainless Helped Solve An Unusual Furnace Problem with Stainless Steel

THE PROBLEM: This manufacturer of grain-drying equipment was using a cylindrical furnace fabricated from carbon steel with a refractory lining. In this set-up, frequent failures created a major problem due to the fact that replacement costs were excessive.

THE SOLUTION: At the suggestion of the CSS sales engineer servicing this customer, tests were made with furnaces fabricated from stainless steel. As the result of these tests, the company standardized on stainless steel for this application and the records show that this problem has been eliminated. In fact, the change-over to stainless steel made possible the development of a portable grain dryer, greatly expanding the company's sales volume in the field.

There may well be a place for stainless steel in your production picture, too.

Why not let the House of Stainless help you explore these possibilities for your products?

Metallurgical service, complete warehouse stocks and direct mill shipments make the House of Stainless a most logical source for information as well as production needs.

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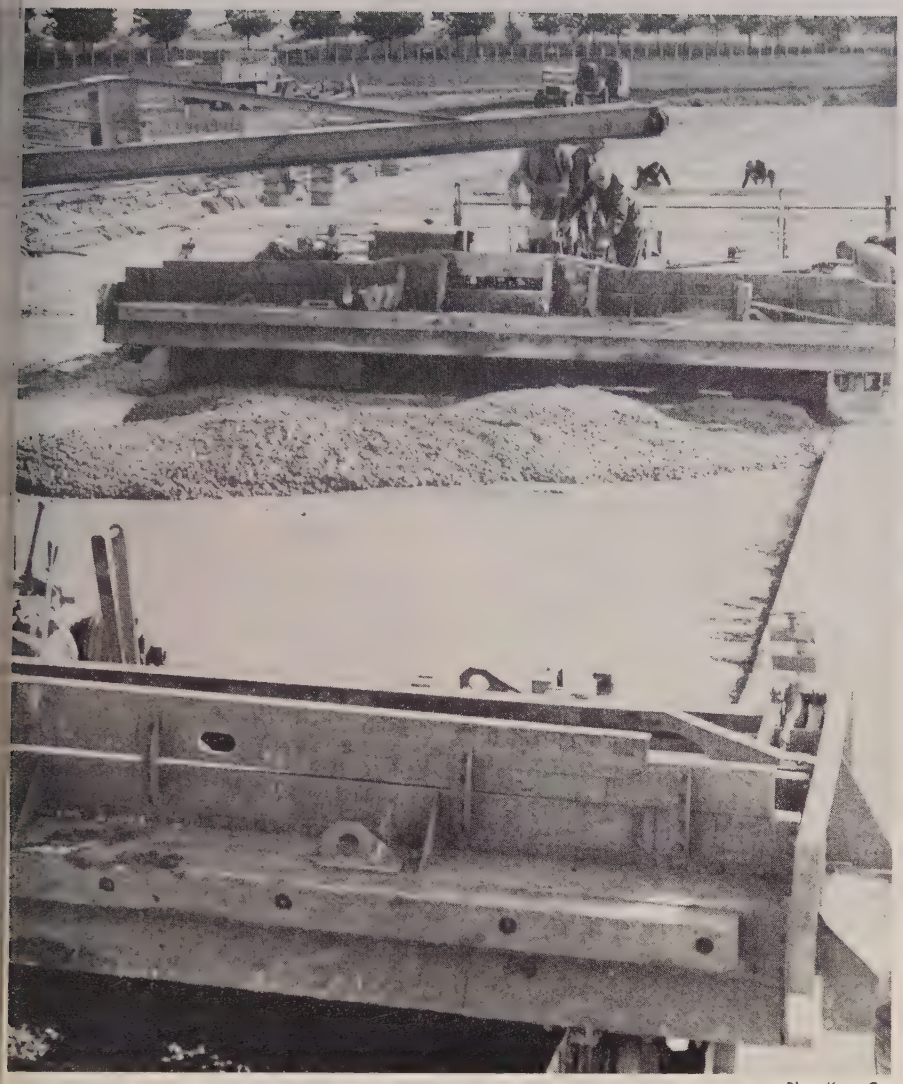
Sales Representative at Bloomington and Rockford, Illinois; Indianapolis and South Bend, Indiana; Cedar Rapids and Bettendorf, Iowa; Grand Rapids, Michigan; Appleton, Wisconsin.



Blaw-Knox Co.

More foreign construction spells U.S. business as . . .

Building Machine Exports Boom

REVIVING foreign demand will bring this year's export sales of earthmoving, construction and mining equipment to well above 1953's record $357 million.

Testifying to the increasing business tempo are the many new lines of credit being granted by the Export-Import Bank. For example, better than $10 million has been shared by Clark Equipment Co., Buchanan, Mich.; Bethlehem Steel Export Co., New York; Blaw-Knox Co., Pittsburgh; and Schield Bantam Co., Waverly, Iowa.

Down Under—Australia is one place where the dollars will go. The World Bank has just awarded her a fourth loan to cover capital equipment imports, bringing the total up to $285 million. More than $27 million of the latest sum will be spent to improve roads and other means of transportation.

Only about one-quarter of Australia's road network is paved. The loan will finance the purchase of tractors, graders and other road construction equipment.

About $76 million of earlier loans is also to be spent on transportation, roads, rolling stock and air transportation.

East Africa — Here's another area where demands for improved transportation are making markets. Since 1947, traffic through port and rail systems of Kenya, Uganda and Tanganyika has more than doubled. The World Bank has just loaned $24 million to help finance modernization of these facilities. Add to that a further $75 million to be borrowed on the London capital market, and you have the makings of a sizable program.

Work, to be completed by the end of 1957, includes building deep-water berths and other port facilities, construction of new track and improvement of the permanent way.

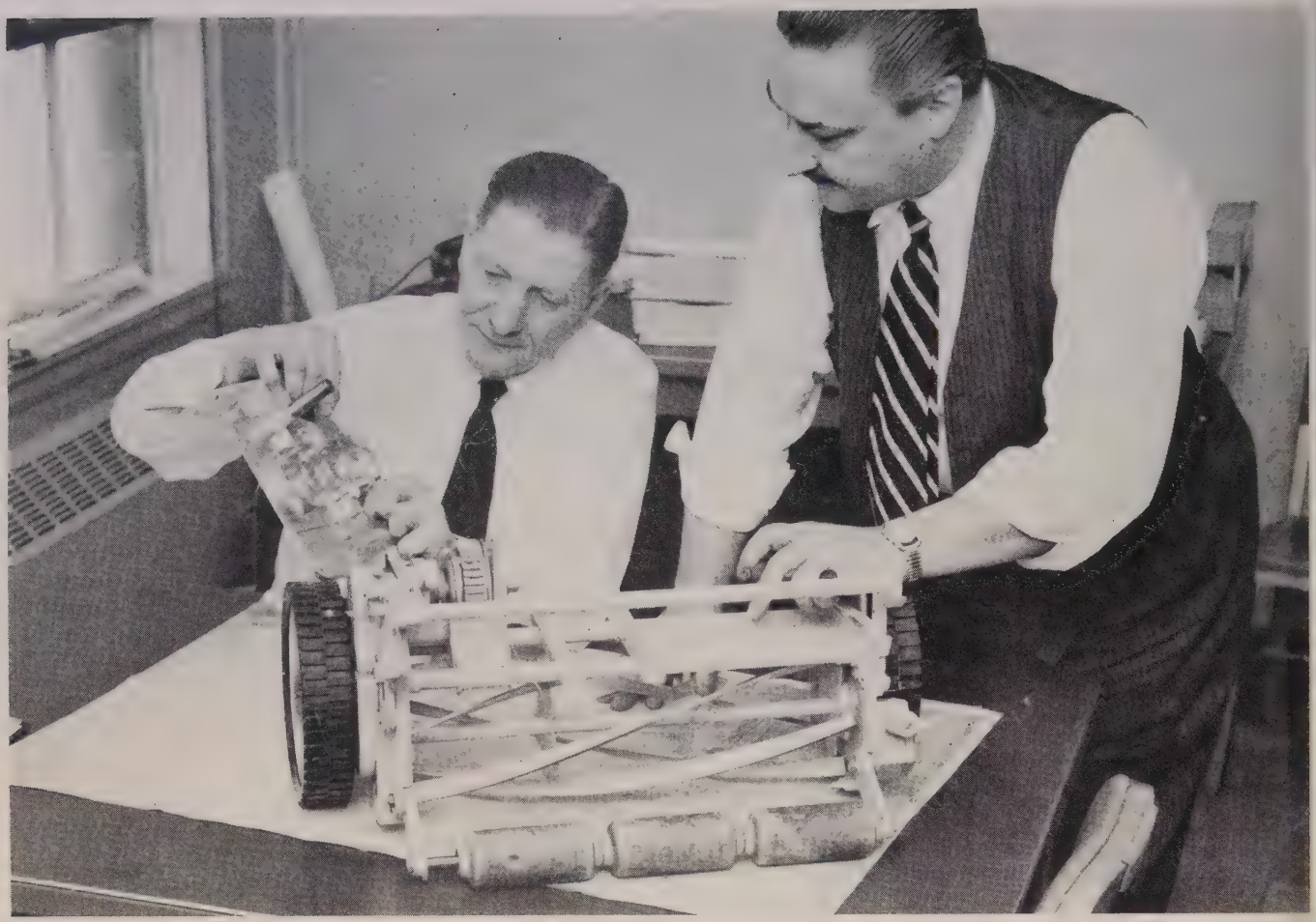
Wheels Mean Business—Despite some slackening of trade with the U. S., Europe also offers potential for increasing sales of construction, mining and excavating machinery. Europeans are taking to wheels as never before. Although auto production is breaking records in England, Germany and France, the market is still far from satisfied. England still has 12-month waiting lists for popular cars, despite production of 1-million-plus units last year. In England, as in the other European countries, roads are already overflowing and must be improved.

Also, in Germany and other Western European nations, prewar aviation networks are being revived and expanded. New airport construction is still a big factor in equipment sales horizons.

Capital Equipment—Exports to Latin America are being increased as well, both to build processing plants for raw materials previously exported and to build a road and rail system capable of handling the new flow of goods and traffic. According to Machinery & Allied Products Institute figures, railway transportation equipment sales to Latin America rose from $17.8 to $31 million in 1954 from 1953.

Other coming expansions that spell markets for U. S. capital equipment: Iraq will spend $2.5 million for airports and roads this year. NATO plans projects worth over $13.6 million in France and Turkey. Fund for South Italy (Cassa per il Mezzogiorno) is authorized to spend up to $175 million annually for land reclamation, development of roads, railways, aqueducts and sewers.

Outlook — American foreign trade authorities are expecting these factors to boost construction machinery business some 15 to 25 per cent from last year, to a total volume of at least $400 million. Some predict 1956 will be better.



Design Service Sells Diecastings

CAN A PARTS SUPPLIER design the end product for his customer? A job diecaster who believes "you have to go off the highway to get customers today" is working wonders by doing it.

By helping your customer, you're helping yourself, found Precision Casting Co. Inc., Fayetteville, N. Y. "Our interest and our customer's interest are one and the same," explains W. J. During, president. "Product design is an important way to diversify and is proving to be a sound approach to a rapidly expanding future."

Calculated Risk—Wrapping a package around an idea, Precision invests its technical talent in calculated speculation. For a lawn mower manufacturer, Clemson Bros. Inc., Middletown, N. Y., Precision design engineers visualized a power machine with eye and sales appeal, which they translated into engineering drawings and a clay model. The gamble paid off: The mower was well suited for application of diecast components (it uses 38 of them!). Precision got the job (see photograph above).

A co-operative venture in design was the Ronson Windlite cigaret lighter. Ronson wanted a sturdy case with the fewest possible parts and with good chrome plating properties. Zinc diecastings were investigated and found to be a natural. Die design and gating were critical; close control of the casting was mandatory to achieve jeweler's finish and because the reservoir was to be sealed by mechanical expansion of a synthetic rubber gasket (an adaptation of the O-ring principle to an irregular shape). The finished case is a unique combination of diecastings and steel stampings.

Service Sells—This expansion of customer service, which branches into design ideas and mechanical improvements, offers a sizable potential in selling small companies on the merits of the diecasting process, Precision believes.

A distinction is drawn between hard-sell and oversell. "Logically and economically, there are many products that can be diecast," Mr. During tells his sales engineers, but—"never sell a misapplication."

Biggest Job—This is only one of Precision's formulas for keeping its nine plants and more than 2500 employees busy turning out over $30 million worth of diecastings yearly. Termed the largest independent diecasting company in the country, Precision sells to over 400 firms in widely diverse fields, such as hardware, electrical equipment, photographic equipment, office machinery, machine tools, plumbing, heating and sporting goods. In terms of dollars, Precision makes its greatest sales to the auto industry, as do most diecasters.

A neat sales accomplishment has been the strong position of the company in serving the auto industry despite big captive capac-

ity of automakers. On 1955 models, Precision is processing grilles (for Buick, Packard, Nash, Studebaker and Hudson) and innumerable other parts, such as bezels, insignia, moldings and carburetors.

The job caster provides an alternate supply source in event of disaster or strike. He also represents know-how in a specialized art.

Sales Upturn—The auto industry promises to gulp a big portion of diecastings produced in 1955—estimated at over $400 million for job shops alone. Last year, sales slid from 1953's record $320 million to $268 million.

Shipments, including those of captive shops, are expected to consume 280,000 tons of zinc and 137,500 tons of aluminum in 1955, against 221,000 tons of zinc and 112,500 tons of aluminum in 1954. The increase will stem from autos: New models use eight times more zinc than last year's; one model takes nearly 40 lb. Grilles are the big zinc user, automatic transmissions the big aluminum user. The trend toward diecast grilles started in 1936, was reversed toward stampings with plating restrictions and now is swinging back again. The selling point for diecastings is the design freedom they allow stylists.

Volume Process—Diecasting is essentially a volume process because of the investment tied up in dies. Die materials are undergoing close scrutiny for ways to increase die life. Casters have raised their sights toward die materials that can stand 1800-2000° F. The industry is seeking die steels that will allow using higher melting point aluminum alloys. Finding them will not only boost aluminum's applications, but could also point the way to economical diecasting of brass. Some diecasters believe industry's volume could be doubled by the development of successful brass diecasting techniques.

Magnesium developments will gather momentum also, say technicians. The casting cycle is as fast as it is with aluminum, but oxide formation in the dies, metal shrinkage and dross loss are problems. With their solution, magnesium could approach aluminum in dollar sales.

Methods Improve — Die techniques have also improved tremendously, points out Precision's engineering vice president, J. J. Punke. For the 1955 Packard grille, 7000 hours were required to tool a 4-ton die which produces a 12-lb part. Combination dies and multiple cavity dies are in common use. Inserts (such as heating elements) can now be cast in the part. New markets have been reached by swinging into products of high strength and size and use of bigger machines with faster cycles.

Diecasters' sights are centering on these industries for important new gains: Home appliances, electrical ware, office equipment, radio and television, photography and optics and builders hardware. The diecasting industry, confident that they can be sold, is aggressively going off the highway to do it.

CRUSADING PAYS FOR BILL DURING, his Precision Castings Co. Inc. and his industry.

A man with a mission—spreading the gospel about diecasting—he has interpreted his industry to governmental officials in two wars and for years has been showing manufacturers what zinc, aluminum and magesium diecastings can do for them.

Ten-Gallon-Hat Trademark—Rising from the tool and die ranks in the West, Bill built his first diecasting machine from a photograph, using a man's foot in the picture for scale. With that crude machine he won his first contract, and later organized his own company in California before joining Precision as chief engineer 33 years ago.

Diecasting was in the doghouse during World War II because of high porosity resulting from low pressure casting and nonstandard alloy formulation which caused many failures. Bill During helped get it out by promoting standards. He chairmanned a committee which solved the aluminum scrap problem. It devised means of turning pots and pans into a homogeneous alloy which broke the fuse production bottleneck.

Quality, Prices—As a leader in his industry, Bill During has been outspoken in support of the "Certified Zinc" program to maintain quality and in his pleas for stable metal prices.

Now president of American Die Castings Institute, Bill During urged Defense Mobilizer Arthur Flemming last month to authorize governmental control of scrap aluminum exports which were causing havoc in the procurement of material needed for diecastings.

Education—Industrial scholarships for the study of diecastings in colleges and industrial campaigns to sponsor educational programs are his pet projects.

Despite extensive activities on behalf of the industry, Bill During knows nearly every one of his employees. Mindful of technical needs of the industry, he encourages company engineering and production clinics to promote cross-fertilization of employee ideas.

Almost everything that turns at

GREAT LAKES TURNS ON HYATTS!

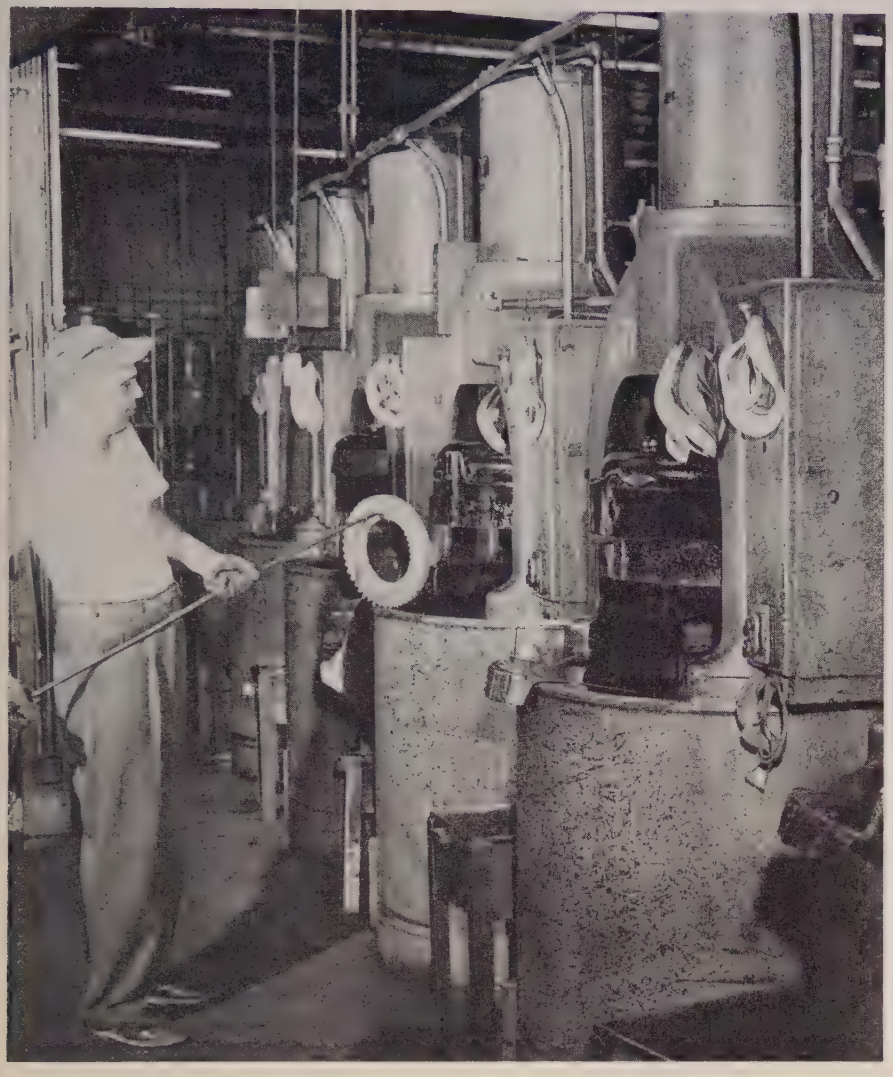
At the big Ecorse plant of Great Lakes Steel, Detroit division of National Steel Corporation, you'll find HYATT Roller Bearings on the strip mill, the slabbing mill, both blooming mills.

You'll find HYATTS on cranes—mill motors—ingot cars—charging cars.

To keep a steady supply rolling to Detroit's steel-hungry auto assembly lines and many other customers, one of America's foremost steel producers depends on HYATTS. Great Lakes can't afford to depend on anything but the *best* in roller bearings. *Can you?* Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER



Production of ring gears and everything else climbs as . . .

Restyled Chrysler Corp. Revives

AS A LIFE INSURANCE croupier, Prudential is more than hep on longevity. But some wondered if the rock of Gibraltar was cracking up when it bet $250 million that Chrysler Corp. was not about to become the Chrysler corpse.

Comeback—Increasing evidence that Prudential was prudential, indeed, is supplied by word that Chrysler earned more during the first two months of this year than it did in 1954. Shipments of cars for the first three months of this year break all previous first-quarter records. And it will be the second highest quarter in the company's history. The firm nabbed 19.4 per cent of the industry's total during January and produced 20 per cent of 1955 cars built, according to *Ward's Automotive Reports*.

Chrysler Corp. has turned out more than 670,000 of its 1955 models and has orders for 270,000 more. The firm is building about 34,000 cars a week, compared with 15,000 a week just a year ago. As Chrysler goes to the bank with a first-quarter pay check of $935 million in sales, it's common talk that the firm is on its way "back."

How It Began — Interestingly enough, Chrysler's "comeback" really started in 1950 when to all outward appearances it was doing well. At that time, executives of the corporation realized that if the firm did not progress onward and upward it would move downward and outward quickly. Key to the problem was an organization that had grown too large for central staff control. Under Chrysler's energetic new president, L. L. Colbert, careful study began on what was required.

Scrutiny of other corporate structures indicated that Chrysler's situation was not precisely similar to any; hence the firm set out to develop its own. Now working on the job is a divisionalization team. Made up of 20 top departmental men, it mirrors the corporation in miniature. Under their advisement, the firm established its divisions as autonomous profit centers and created a new division to handle defense work.

Restyling — The restyling of Chrysler Corp. products perhaps has overshadowed the restyling of the corporation this year, but over the long pull, divisions with staffs having authority and opportunity to move ahead promise to bring new competitive strength. And that's only part of the fundamental thesis under which the firm probably will operate.

It appears that the capacity race will find Chrysler a growingly enthusiastic competitor. Recently announced is an expansion program totaling close to $150 million. It includes a new Chrysler Division plant, a Plymouth V-8 engine plant and a one-third increase in the engineering facilities in Detroit, plus a new PowerFlite transmission plant at Kokomo, Ind. Also under way is a complete modernization of facilities purchased from Briggs last year.

Capacity Background—The reason Chrysler must get into the capacity race and stay there is obvious: In 1953, the firm turned out more cars than any other year in its history; but with the exception of strike-disrupted 1950, it wound up with the smallest share of the market since 1932. Also a problem: A firm with a hot line of cars must have the capacity to crank them

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out or the iron cools quickly. Getting cars on the road quickly so the public thinks "that's the way a car ought to look," is a proved Detroit axiom. It pays off in the sales department.

As capacity increases, the establishment of more autonomous divisions is probable. A PowerFlite transmission division, an engine division, etc., could be a result of grouping similar operations for maximum economy. Dodge, traditionally the manufacturing mogul of the corporation, is finding operations taken over by such divisions as the new Plymouth engine plant. Don't expect the divisionalization team to be disbanded quickly. The philosophy of dynamic growth and continual readjustment for increased efficiency is evident in the corporate outlook.

Corporate History—Perhaps the need for such an approach can be illustrated by Chrysler's growth during its 30-year history. Established with 12 plants, comprising 12 million sq ft of floor space, the corporation now operates more than 50 plants, with almost 40 million sq ft of floor space. Over 9 million of the 18.5 million vehicles the firm has built were made during the last ten years. Expenditures for plant and equipment since World War II are approaching $750 million.

George W. Troost, Chrysler Corp. financial vice president, reports: " . . . everyone underestimated the amount of stimulation that would result from new models by the entire industry." He estimates that 1955 may be one of the top two or three years, if not the top year in industry volume, "provided there is no major interruption of car and truck production." He reiterates that the firm wants 20 per cent of the industry's volume, which probably would indicate a record year for it.

Look Ahead—But that's only the immediate year. The firm's chief statistician, W. C. Flaherty, feels the industry can look forward to strong business activity during the next decade. Population should reach 177 million by 1960, an increase of 25 million over 1950. Perhaps even more important, is the growth of a "great, new, middle-income class with an annual income of $4000 to $7500 before taxes. Only 14 per cent of the nation's families in 1946 had such an income, while in 1952 that group had grown to one out of three families." This group, Mr. Flaherty believes, has the means and desire to buy goods and services.

Chrysler, you may be sure, figures to cash in on the opportunities.

The contrast of 1955 with 1954 is already an indication that restyled Chrysler products are finding success. Although bumps like the Guaranteed Annual Wage lie in the road ahead, the prospects of success for the restyled corporation look pretty good, too.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,591†	574,215
March	920,000*	672,485
April		676,248
May		621,262
June		623,732
July		543,540
August		523,799
September		364,441
October		312,078
November		616,395
December		761,954
Total		6,884,616

Week Ended	1955	1954
Feb. 26	195,079	145,980
Mar. 5	192,892	139,263
Mar. 12	203,149	143,478
Mar. 19	212,776	154,895
Mar. 26	216,777	149,586
Apr. 2	214,500*	146,498

Source: Ward's Automotive Reports. †Preliminary. *Estimated by STEEL.

Woman's World?

A new merchandising angle is being introduced by Hudson division of American Motors Corp. Its sales vice president, N. K. Van Derzee, announces a new house-to-house Hudson Rambler sales campaign entitled, "Every Woman Should Have a Car of Her Own." This is a refreshing sound of people out to sell automobiles.

If this plan catches on, you should see a sharp increase in the number of ramblin' ladies, not to mention their husbands.

Rambler Rambling

The Rambler (now being sold by both Hudson and Nash dealers) offers a lot of transportation for the money. Equipped with automatic transmission, reclining seats and air conditioning, this car delivers for less than many a stripped conventional car. And if you go for the cross-country model, it offers plenty of plush for the dough, as well as nice cargo capacity.

Acceleration in the car remains in the average department, but the economy is well above average, and you can't have everything. Biggest improvement in 1955 is the cut out for the front wheels which relaxes the driver like a fat lady just out of her corset. Why the car wasn't built that way from the start seems a fair question. Certainly the new version is 100 per cent improved.

Handling is satisfactory. At speeds of 70 mph or so, the car seems quite at home on the road. Passing torque, of course, suffers a bit for the economy factor, and the engine seems a bit wound out if the kick down is used above moderate speeds. The instruments are closely grouped and the dash offers no reflection problems, though lights instead of ammeter and oil pressure gage, will bother a few.

Exhaust Notes

Production of l'Universelle, the dream truck built by GMC Truck & Coach Division, is reported "as quickly as possible" by Harlow Curtice. Although not all the features in the dream version will be retained, it can be expected that enough will be there to justify the name. Should the truck be built as shown, GMC engineers, who just last week picked up a Citroen for study, will have to go hard.

Also of interest was Mr. Curtice's statement that GM has produced 1,175,000 passenger cars in the first quarter for a new record. It's 35 per cent higher than 1954's mark, the company's previous first-quarter peak. Truck production is reduced, he notes, because of unit loss sustained in bringing out the new Chevrolet and GMC lines. But he points out that despite the high production rate, dealers' stocks remain abnormally low in relation to the rate of sales.

NEW DEPARTURES OF TOMORROW

Cool-running chain saw, like every type of power saw in use today, uses New Departure ball bearings for longer life at peak efficiency

Even Paul Bunyan couldn't match the pace of this "automatic lumberjack" of the future. It fells, sections and loads trees—all at the push of a button!

The company that launches this wonder will probably look to New Departure for ball bearings. For New Departures have proved their ability to hold moving parts in perfect alignment, cut wear and friction, and work long hours without letup—or upkeep. Above all, New Departure has lived up to its name—being first with ball bearing advancements.

So, when improving or designing a product, count on New Departure for the finest ball bearings.

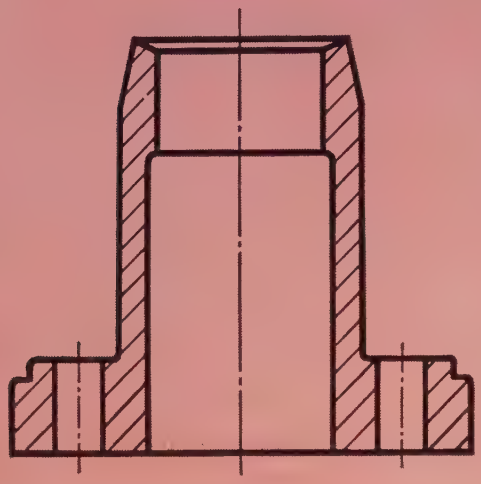
NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT

NEW DEPARTURE
BALL BEARINGS

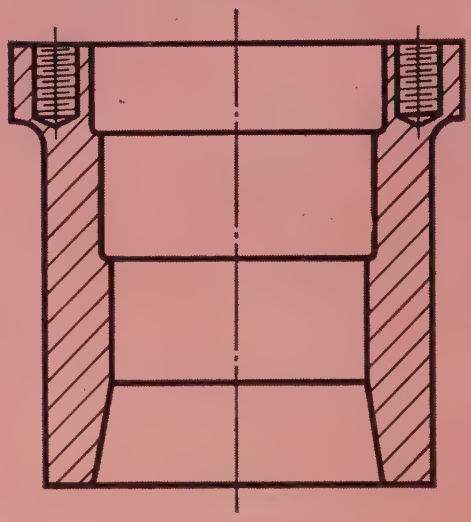
NOTHING ROLLS LIKE A BALL

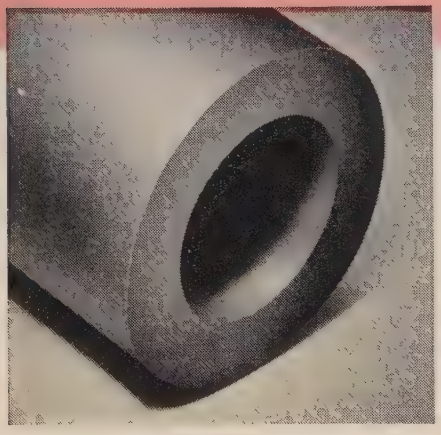
HOW TO MAKE RING-SHAPED TOOL STEEL PARTS FASTER AND EASIER

FORMING AND PIERCING DIE



BLANKING AND FORMING DIE





Graph-Mo Hollow-Bar comes in sizes from 4 to 16 inches O. D. with various wall thicknesses. Immediate delivery on many sizes from warehouses of the distributors, A. Milne Co. and Peninsular Steel Company.

New GRAPH-MO HOLLOW-BAR® eliminates drilling— and machines 30% faster

YOU can eliminate the time-consuming drilling operation when you make ring-shaped tool steel parts from Graph-Mo Hollow-Bar®. The hole comes ready-made. First step is finish boring. There's less scrap, and you use less steel.

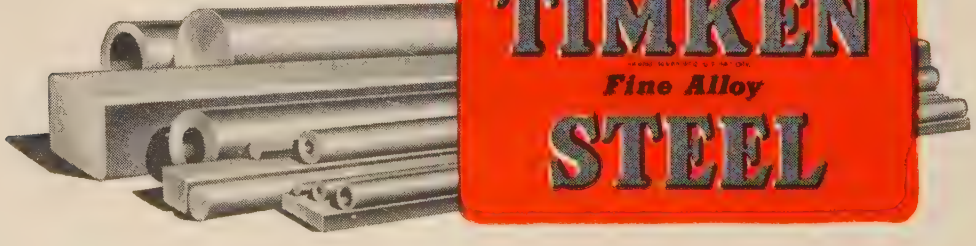
On top of that, the rest of the machining's faster—30% faster, compared to other tool steels. That's because Graph-Mo has free graphite in its structure. It means less tendency to pick up, scuff and gall, too.

That same graphite plus diamond-hard carbides give Graph-Mo amazing wear resistance. Users have written us that Graph-Mo outwears other tool steels, on the average, three to one!

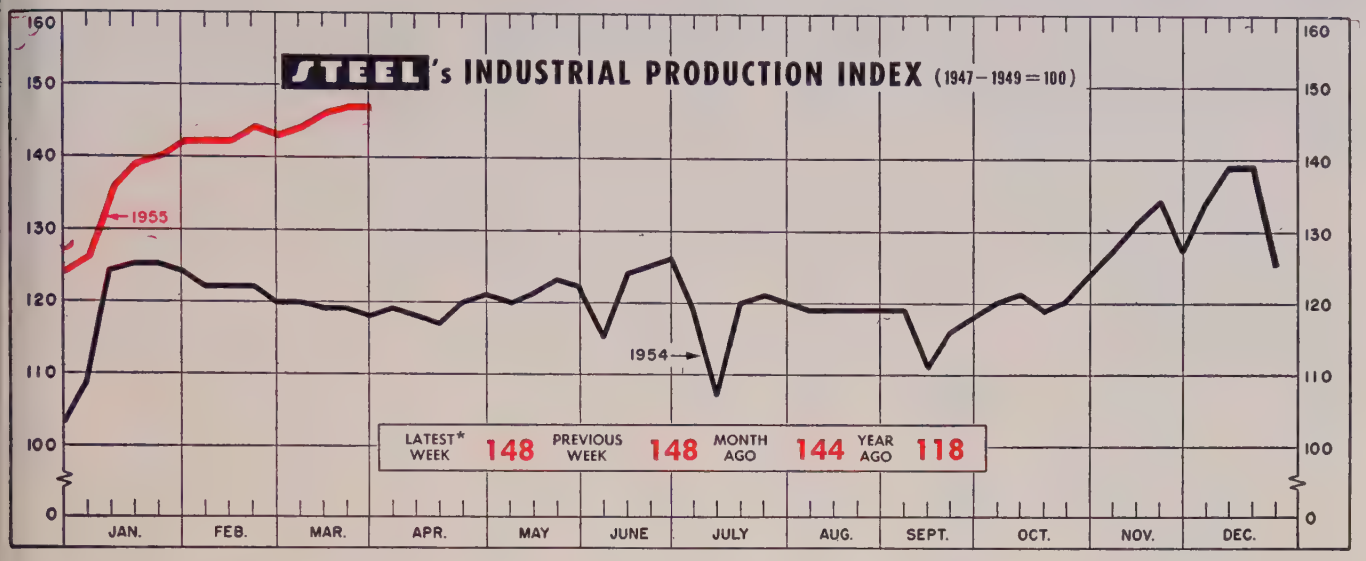
Graph-Mo responds uniformly to heat treatment. And no other tool steel is as stable. Proof: after 12 years, a typical Graph-Mo steel master plug gage changed less than 10 millionths of an inch in dimension!

More facts about Graph-Mo Hollow-Bar? Write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended Mar. 26. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%.

Rising Production Rewrites Record Books

RECORD BREAKING is becoming a habit in 1955. Autos, construction and department store sales are just a few of the front runners. Steel, appliances and industrial production in general aren't far behind previous peaks.

Autos and still more autos are destined to roll off production lines in coming months. Some 737,000 cars are scheduled for April, according to *Ward's Automotive Reports*. That's down a little from March, mainly because of two less working days, but 38 per cent higher than April of last year.

Forecast—Predictions are coming out that 1955 may be the industry's best year:

Harlow H. Curtice, president of General Motors Corp., says: "Public demand for automobiles so far in 1955 indicates that passenger car volume could be at least 20 per cent better than last year's. Potentially, 1955 can be a better year than 1950, the industry's peak production and sales year."

Records—All five GM passenger car divisions set new retail sales records for both new and used cars from Jan. 1 to Mar. 20.

George W. Troost, financial vice president, Chrysler Corp., says: "We at Chrysler have lifted our sights in recent weeks. At the present time, there are many indications that 1955 will be one of the top two or three years, if not the top year, in industry volume—provided, of course, there is no major interruption of car and truck production."

He also said Chrysler's shipments of cars and trucks for the first three months of this year will break previous first-quarter records and will be second highest for any quarter in the company's history.

Building Sprints—The construction boom "ain't done yet." Heavy construction contracts scooted up to $545 million, largest weekly volume in 15 months, in the latest week reported by *Engineering News-Record*.

The dramatic climb pushed

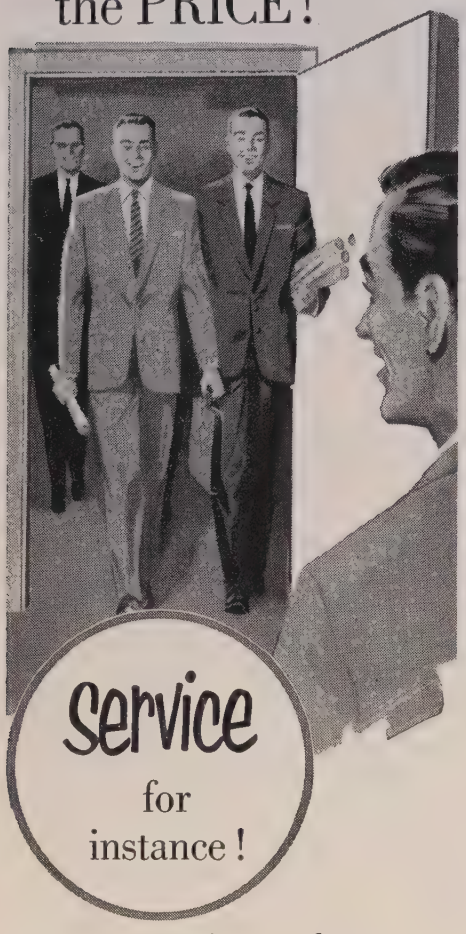
BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,258	2,262	1,648
Electric Power Distributed (million kwhr)	9,825[1]	9,814	8,491
Bitum. Coal Output (1000 tons)	8,050	8,310	6,908
Petroleum Production (daily av.—1000 bbl)	6,800[1]	6,858	6,452
Construction Volume (ENR—millions)	$544.8	$374.8	$283.6
Automobile, Truck Output (Ward's—units)	216,777	212,776	149,586
TRADE			
Freight Car Loadings (unit—1000 cars)	660[1]	656	601
Business Failures (Dun & Bradstreet, no.)	230[1]	226	277
Currency in Circulation (millions)[3]	$29,719	$29,801	$29,632
Dept. Store Sales (changes from year ago)[3]	+14%	+11%	−13%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$21,185	$21,131	$20,426
Federal Gross Debt (billions)	$274.3	$277.8	$270.5
Bond Volume, NYSE (millions)	$14,622	$18,404	$16,797
Stocks Sales, NYSE (thousands of shares)	12,377	14,528	9,167
Loans and Investments (billions)[4]	$84.9	$84.2	$80.8
U. S. Govt. Obligations Held (billions)[4]	$34.4	$34.2	$32.8
PRICES			
STEEL's Finished Steel Price Index[5]	194.53	194.53	189.74
STEEL's Nonferrous Metal Price Index[6]	227.4	227.3	208.6
All Commodities[7]	110.1	110.0	110.8
Commodities Other Than Farm & Foods[7]	115.5	115.5	114.4

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

For Stampings

...look for the PLUS **beyond** the PRICE!



Service for instance!

Ever think how much time good quick service saves you and other key men in both office and plant?

Excellent service — proved every business day for 39 years — is another of the many plusses you get when you buy Detroit stampings.

Look for the Plusses *beyond* the price the next time you buy stampings!

And be sure to try DETROIT

DETROIT STAMPING COMPANY

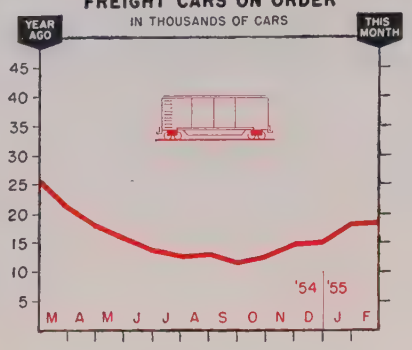
DE-STA-CO

359 Midland Ave., Detroit 3, Mich.

"America's Best-Known Jobbing Stampings Manufacturer"

FREIGHT CARS ON ORDER

IN THOUSANDS OF CARS

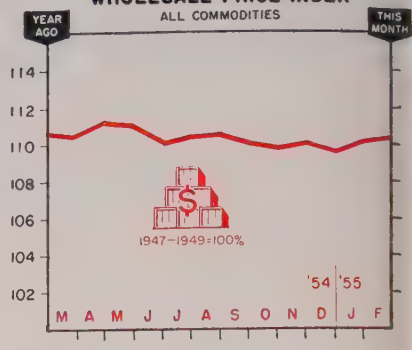


	Awards		Backlogs (end of month)	
	1955	1954	1955	1954
Jan.	5,087	2,942	18,395	27,959
Feb.	2,690	2,057	18,633	25,441
Mar.	....	348	.....	20,966
Apr.	....	909	.....	17,817
May	....	1,071	.....	15,615
June	....	1,139	.....	13,860
July	....	883	.....	12,889
Aug.	....	2,425	.....	13,013
Sept.	....	2,396	.....	11,993
Oct.	....	2,704	.....	12,853
Nov.	....	3,754	.....	14,805
Dec.	....	2,685	.....	15,317
Total	....	23,313		

American Railway Car Institute.

WHOLESALE PRICE INDEX

ALL COMMODITIES



	1955	1954	1953
Jan.	110.1	110.9	109.9
Feb.	110.4	110.5	109.6
Mar.	....	110.5	110.0
Apr.	....	111.0	109.4
May	....	110.9	109.8
June	....	110.0	109.5
July	....	110.4	110.9
Aug.	....	110.5	110.6
Sept.	....	110.0	111.0
Oct.	....	109.7	110.2
Nov.	....	110.0	109.8
Dec.	....	109.5	110.1

U. S. Bureau of Labor Statistics.

Charts Copyright 1955 STEEL.

1955's volume to a new record of $4 billion, 63 per cent above that of a year ago and 9 per cent over the old record set in 1953.

Private construction spearheaded the uprising at $410.7 million. Mass housing was second only to the record week in January, 1953. A new record of $104.1 million was set in commercial building. Industrial construction showed a sharp increase to $64.6 million. Commercial and industrial building are both up more than 50 per cent from a year ago.

Machine Tools Hold Gains . . .

New orders for machine tools have climbed for the third straight month. The index of the National Machine Tool Builders Association is a preliminary 209.7 (1945-46-47 = 100) for February, best for any month since September, 1953. New order volume was almost double November's low of 119.5.

But shipments, except for January's, were at the lowest level since mid-1951, reflecting the drop off of new orders through most of 1954. Now that orders are picking up, shipments should follow.

More heat treating equipment is being sold, too. In February, furnace orders of $5.6 million were received by members of the Industrial Heating Equipment Association Inc. That's an increase of 82 per cent over February, 1954, according to Carl L. Ipsen, executive vice president.

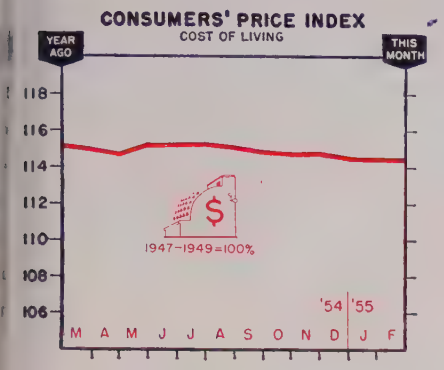
Orders have shown an upward trend since December. That month, plus January and February of this year, exceed the year-earlier period by an average of 78 per cent, says Mr. Ipsen.

Appliances Start Fast . . .

Appliances are starting off to make a near-record year out of 1955. Production is high. So is confidence on the part of both producers and buyers.

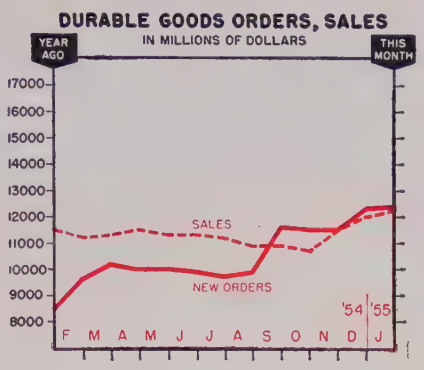
Last year was a pretty good one for appliance people. This one looks even better. A Federal Reserve Board survey (see STEEL, Mar. 28, p. 49) shows more consumers planning to buy major appliances this year than they did in 1954.

Production has started off high. Factory sales of home laundry appliance in January set a record for the month. February slipped 2 per cent under that but was still 28.6 per cent above the 1954 month, according to the American



	1955	1954	1953
Jan.	114.3	115.2	113.9
Feb.	114.3	115.0	113.4
Mar.	....	114.8	113.6
Apr.	....	114.6	113.7
May	....	115.0	114.0
June	....	115.1	114.5
July	....	115.2	114.7
Aug.	....	115.0	115.0
Sept.	....	114.7	115.2
Oct.	....	114.5	115.4
Nov.	....	114.6	115.0
Dec.	....	114.3	114.9

U. S. Bureau of Labor Statistics.



	New Orders*		Sales*	
	1955	1954	1955	1954
Jan.	12,408	8,475	12,294	11,580
Feb.	.....	9,629	.....	11,278
Mar.	.....	10,206	.....	11,385
Apr.	.....	10,021	.....	11,502
May	.....	10,050	.....	11,344
June	.....	9,985	.....	11,395
July	.....	9,700	.....	11,287
Aug.	.....	9,978	.....	10,952
Sept.	.....	11,699	.....	10,933
Oct.	.....	11,478	.....	10,664
Nov.	.....	11,521	.....	11,569
Dec.	.....	12,284	.....	11,992

*Seasonally adjusted. U. S. Office of Business Economics.

Home Laundry Manufacturers Association.

Kitchen appliances (ranges, refrigerators) are also off to a good start, preliminary data show. TV started off 1955 much stronger than in good 1954. The industry's sales are estimated at more than 20 per cent better than a year ago. Radios slipped in 1954, partly because of lower auto output, but they're coming back well this year.

March is usually a good production month; April generally shows some slackness. This year, the dip may be greater than usual because of the tightness in steel. Some producers are already talking about considerable slowdown if steel doesn't loosen up— not likely with autos setting records.

More New Businesses . . .

New business incorporations are picking up right along with the uptrend in business. A February record of 11,369, plus the all-time monthly peak of 13,181 in January, makes a record for the two-month period also, according to Dun & Bradstreet Inc.

Encouraging, too, is a recent slowdown of business failures. In February, they were lowest since last October. For the first time in 22 months, they were less numerous than in the same month of the previous year.

Trends Fore and Aft . . .

Bookings of fabricated structural steel were 468,257 tons in the first two months of 1955, up 24,000 tons from the like 1954 period, reveals the American Institute of Steel Construction . . . Gear sales in February were 5.4 per cent over January's, reports the American Gear Manufacturers Association . . . Sales recovery of power shovels and cranes, which began late last year, picked up speed in the first quarter, says C. B. Smythe, president, Thew Shovel Co. . . . Metal weather stripping sales for the first two months of 1955 were 36.8 per cent ahead of the like 1954 period, states the Weatherstrip Research Institute. . . Billings by Otis Elevator Co. in 1955 should at least equal last year's all-time high of $105 million for elevators and service, predicts LeRoy A. Peterson, president . . . Gardner-Denver Co., maker of a wide variety of industrial tools, had sales of about $8.8 million in first quarter, up substantially from a year ago, estimates Gifford V. Leece, president.

Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

here's our new baby

forged steel rolls

THE OHIO STEEL FOUNDRY CO

LIMA, OHIO • Plants at Lima and Springfield, Ohio

GLENN M. HERRING
. . . H-VW-M steel mill sales mgr.

C. ALLEN DOLBY
. . . Brainard Steel gen. sales mgr.

FRANKLIN FARREL III
. . . heads Farrel-Birmingham Co.

Glenn M. Herring was made manager-steel mill sales for **Hanson-Van Winkle-Munning Co.**, Matawan, N. J. **William H. Brown** was made sales representative at Philadelphia for eastern Pennsylvania; **Frank W. Mountain** at Pittsburgh for western Pennsylvania, West Virginia and Alabama.

Edward H. D. Gibbs was made vice president-sales of **Heyl & Patterson Inc.**, Pittsburgh.

Vincent E. Lysaght was made general sales manager, **American Chain & Cable Co. Inc.**, New York.

Darwin H. Deaver was elected vice president and general manager, **Automatic Electric Sales Corp.**, Chicago.

Edward C. Conner was made works manager of the Greensburg, Pa., Works of **Walworth Co.**

American Smelting & Refining Co., New York, appointed **Ralph W. Bailey** sales manager of its continuous-cast products department. He replaces **John L. Kimberley.**

Fred K. Krell was made assistant sales manager, fittings division, **Ladish Co.**, Cudahy, Wis.

Henry P. Stanley was made director of aviation sales, a new position at **AC Spark Plug Division**, General Motors Corp., Flint, Mich.

C. Allen Dolby was named general sales manager, **Brainard Steel Division**, Sharon Steel Corp., Warren, O. He was industrial sales manager at Weatherhead Co.

Don S. Connor was made general manager of **Micromatic Hone Corp.**, Detroit, retaining his title of executive vice president. **William H. Harris Jr.** was made vice president and assistant general manager; and **R. G. Ellis**, chief engineer.

Nicholson File Co., Providence, R. I., elected **Stanley Livingston Jr.** vice president - operations, **Charles E. Fogg** vice president-secretary, **E. Blair Le Fevre** vice president - engineering, **Bruce R. Zeiser** vice president-foreign sales, and **Edmond A. Neal**, vice president-domestic sales.

Walter J. Wood was named vice president-sales, **Kennedy Valve Mfg. Co. Inc.**, Elmira, N. Y. He was eastern division manager of tubular sales for A. O. Smith Corp.

Pittsburgh Coke & Chemical Co., Pittsburgh, appointed **W. C. Hillman Jr.** manager of coke sales.

E. O. Mitchell replaces the late **K. L. Holmes** as purchasing agent, **Chicago Pump Co.**, Chicago. **J. Zelenietz** becomes assistant purchasing agent.

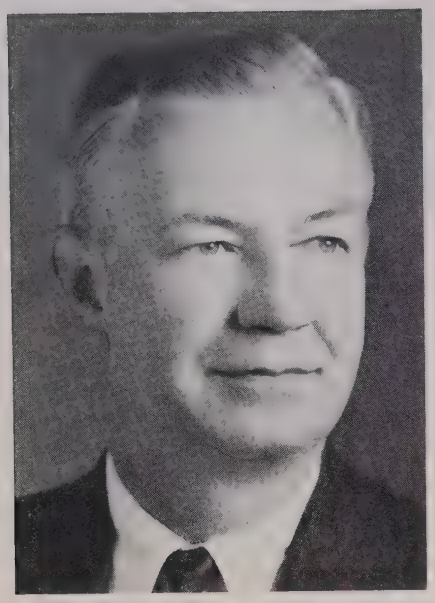
Franklin Farrel III was elected president, **Farrel-Birmingham Co. Inc.**, Ansonia, Conn., effective May 1. He succeeds **Franklin R. Hoadley**, who will retire. Mr. Farrel has been executive vice president since 1950. Newly elected vice presidents are **Edward S. Coe Jr.**, manager of the Ansonia and Derby, Conn., plants, who will also be assistant to the president; **Robert M. Honegger**, general manager of the Buffalo plant; and **Joseph LeMay**, who continues as treasurer. **Julius G. Day Jr.** is the new secretary and general counsel.

Harry J. Hemingway was elected president, **Advance Aluminum Castings Corp.**, Chicago, succeeding the late **Roy W. Wilson.** Mr. Hemingway is a former president and director of American Marietta Co.

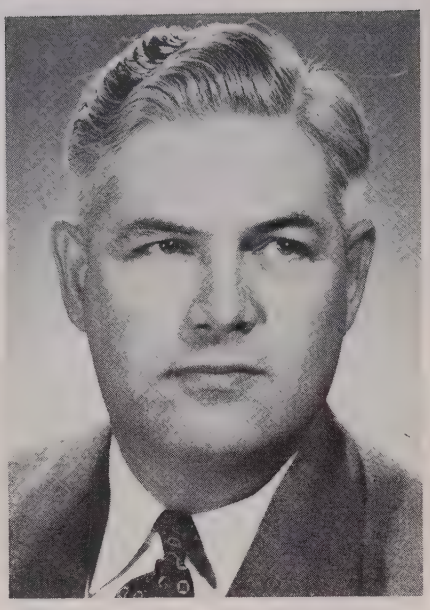
Roy L. Blanchard, former director and vice president-operations, was elected president and general manager, **Beaver Precision Products Inc.**, Clawson, Mich., to succeed **Aubrey E. Streadwick** who continues as a director.

James G. Richmond was made manager of manufacturing at **Indiana Steel Products Co.**, Valparaiso, Ind.

Louis Syrbnik was made director of a special projects division of



CARL A. EVERSMAN
. . . manages Mullins' Salem plants



PHIL NORTON
. . . Wisconsin Motor executive v. p.

WILLIAM TAYLOR
. . . . directs Detroit Bevel Gear

S. & S Machinery Co., Brooklyn, N. Y.

Carl A. Eversman was named manager of **Mullins Mfg. Corp.'s** Salem, O., plants. He was director of sales promotion and analysis of Western Automatic Machine Screw Co.

Hayward F. York was named operating manager, jet engine plant, **Chrysler Corp.**, Detroit.

Leonard G. Taggart was made chief purchasing agent, radio and television division, **Sylvania Electric Products Inc.** He has headquarters at the Batavia, N. Y., assembly plant.

George B. Secor was named assistant to the president of **Gregory Industries Inc.**, Toledo, O. He was with Mather Spring Co. for many years.

Fabricators Steel Corp., Bladensburg, Md., appointed **Edward Stern** assistant general manager; **S. H. Burgess** sales manager, fabrication division; and **Victor Siegel** assistant treasurer and credit manager.

Trane Co., La Crosse, Wis., promoted **Werner G. Wassmandorf** to manager of the reciprocating compressor sales department; **Lloyd E. Eater** to manager, fluid cooler sales department; and **Wilfred R. Barnard** to head the UniTrane sales department.

Phil Norton, vice president-sales since 1950, was elected executive vice president of **Wisconsin Motor Corp.**, Milwaukee. **F. B. Esty** was advanced to chief engineer. **Ralph Switzer** was made director of research and development engineering.

Edgar R. O'Brien was elected vice president and general manager, **Edgcomb Steel of New England Inc.**, Milford, Conn. **William F. Vosmer** was made secretary.

C. Spence Purnell, sales executive for **Westinghouse Electric Corp.** in New York for many years, was named manager of the South Pacific district, with headquarters in Los Angeles. He succeeds **Stanley M. Johns**, who was made sales manager of the hydraulic drives department of the gearing division (Muncie, Ind.); **T. P. Dunkin** was named manager of manufacturing; and **P. L. Fosburg** was made engineering manager. Schneider Mfg. Corp., Muncie, a Westinghouse subsidiary, was recently dissolved to form the hydraulic drives department.

A. H. Jackson, former sales manager-tower department, equipment division, **Blaw-Knox Co.**, Pittsburgh, was promoted to general manager of the division's new engineering and development department.

Douglas Wallace was made a vice president of **Graybar Electric Co.**, New York.

Detroit Bevel Gear Co., Detroit, made **William Taylor** assistant to the president. In this capacity, Mr. Taylor is in charge of all company operations. He was purchasing agent for the past year.

At the Milwaukee plant of **Joseph T. Ryerson & Son Inc.**, **John J. McKeown** was made manager, work order department, to succeed **F. C. Wendorf**, resigned. **Gordon F. Witt** was named field representative, tubular products and cold finished bar department, to succeed **Harry L. Stourla**, who transferred to the Chicago plant on special assignment.

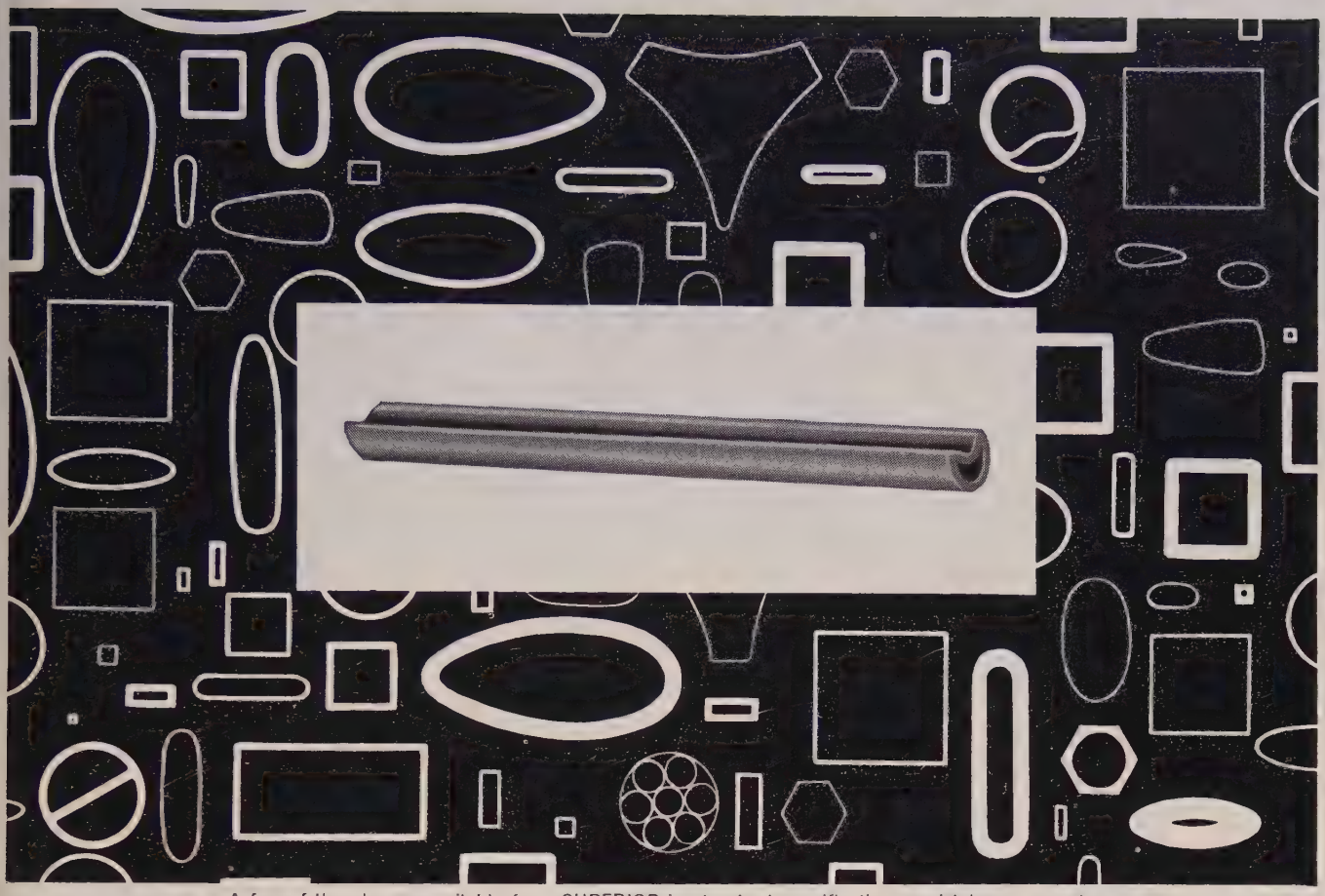
Cyril D. Oberg was named manager of aircraft and engine component sales, **Solar Aircraft Co.**, San Diego, Calif. **William F. Cords** was made assistant to Mr. Oberg.

A. M. Thomas was made director of sales for **Heller Bros. Co.**, Newcomerstown, O. He succeeds **Lawrence M. Rich.**

Ernest L. Mathy was elected vice president, general manager and a director of **National Welding Equipment Co.**, San Francisco.

Dever C. Warner, vice president-treasurer, was elected president of **Bridgeport Hydraulic Co.**, Bridgeport, Conn., to succeed **Samuel P. Senior**, who retains the offices of chairman and treasurer.

Kaiser Steel Corp., Oakland, Calif., made **John W. Miller** manager of



A few of the shapes available from SUPERIOR in standard specifications and tolerances or to your own design. The tube in the foreground is a gun drill shank made from 4130 alloy steel.

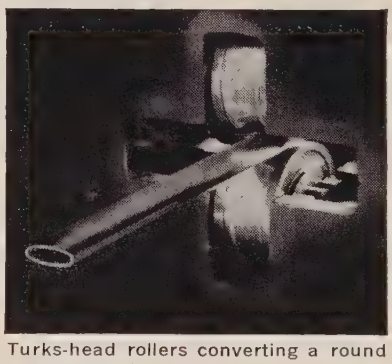
Save time and money on special shaped tubing

"SUPERIOR" TUBING IS IMMEDIATELY AVAILABLE IN A WIDE RANGE OF SHAPES, FORMS, ALLOYS

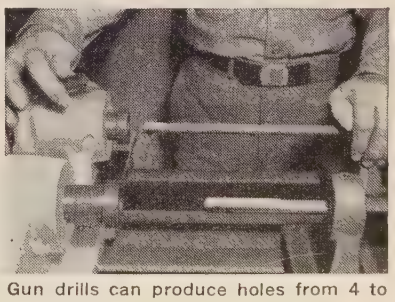
Many manufacturers have discovered that SUPERIOR's ability to supply as standard what many firms consider specialty tubing saves them trouble, time and money. SUPERIOR makes round, square, oval, rectangular, elliptical and flat oval tubing, for instance. It makes capillary tubing, pointer tubing, electronic tubing, telescopic sizes, large OD-light wall tubing. Over 55 analyses are available in carbon, alloy and stainless steels; in nickel and nickel alloys; in beryllium copper, titanium, zirconium.

The gun drill shank shown above and on the right is a good example of SUPERIOR's ability to supply unusual shapes. This newly rediscovered method of producing close-tolerance high-finish holes demands straight, rigid, accurate shanks with a 110° V-groove. SUPERIOR can produce such a shape—and others—in a fraction of the time and cost it would take a customer to form his own.

If you're having difficulty getting the kind of tubing you want, SUPERIOR can undoubtedly help you. Write for your free copy of Bulletin 40—*A Guide to the Selection and Application of Superior Tubing*. SUPERIOR TUBE COMPANY, 2005 Germantown Ave., Norristown, Pa. *On the West Coast:* Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif.



Turks-head rollers converting a round section of SUPERIOR tubing into the typical elliptical shape for a Bourdon gage tube.



Gun drills can produce holes from 4 to 230 diameters or more in 4 times the speed of conventional drilling methods or better. Holes so produced are straight and round to tolerances of 0.0002" or less and wall finishes are 7 mu-in or better.

All analyses available in .010" to ⅜" OD; certain analyses in light walls up to 2½" OD

Superior Tube

The big name in small tubing

product planning. He was superintendent, production planning.

Theodore Z. Herr was appointed chief engineer, **American Welding & Mfg. Co.**, Warren, O. He was chief engineer, building products division.

C. C. McDermand and **A. S. Krainik** were promoted to assistants to the president of Aluminum Goods Mfg. Co., Manitowoc, Wis., and **G. C. Kubitz** was made general sales manager.

Paul W. McDonald was made regional sales manager, western division, **R. M. Hollingshead Corp.** He will headquarter at the new Sunnyvale, Calif., plant, now nearing completion.

Ben H. Ward was made manager, factory division, **Lees-Bradner Co.**, Cleveland. He continues as assistant treasurer.

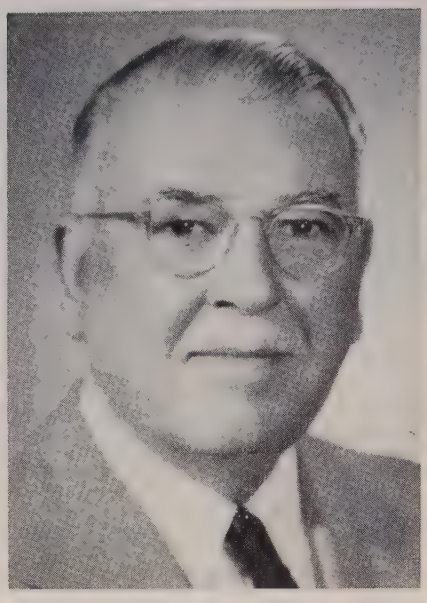
Utica Drop Forge & Tool Corp., Utica, N. Y., appointed **Frank L. Marshall** sales manager, tool division. He was vice president-general manager of Mayhew Steel Products Inc.

Ruth M. Slafter was named purchasing agent of **Automatic Spring Coiling Co.**, Chicago.

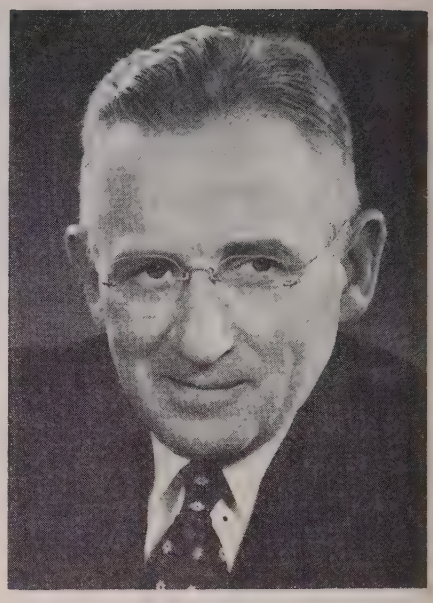
Daniel H. Dellinger was made assistant vice president in charge of research, development and quality control for **Great Lakes Steel Corp.**, Detroit, division of National Steel Corp.

John B. Dempsey, Detroit branch manager, was appointed manager of electric tool sales of **Thor Power Tool Co.**, Aurora, Ill. He is succeeded at Detroit by **Otto Shellenberger.**

A. F. Anzlovar was elected vice president of **Mercast Mfg. Corp.**, LaVerne, Calif.



CHARLES J. STILWELL



WALTER K. BAILEY

. . . chairman and president of Warner & Swasey Co.

Charles J. Stilwell was elected chairman of the board of **Warner & Swasey Co.**, Cleveland. He is succeeded as president by **Walter K. Bailey** who has been vice president since 1942.

Marshall E. Munroe was appointed director of procurement for **Massey-Harris-Ferguson Inc.**, Racine, Wis. He succeeds **A. A. Thornbrough** who was promoted to vice president of Massey-Harris-Ferguson Ltd., Toronto.

I. L. Place, vice president, assumes duties of general manager, **Heresite & Chemical Co.**, Manitowoc, Wis. **Robert Riha** was made sales manager.

Gilbert Tramer Co., Cleveland, appointed **Edward M. Grohs** assistant sales manager.

Paul J. Every was named assistant general sales manager, **Cummins Engine Co. Inc.**, Columbus, Ind.

Donald J. Zeigler was named Pittsburgh district sales manager, **Wright Hoist and Ford Chain Block Divisions**, American Chain & Cable Co. Inc.

Jones & Laughlin Steel Corp., Pittsburgh, appointed **R. Grant Fleck** manager of its New York ore division, formerly known as Benson Mines. **R. E. Durocher**, plant metallurgist, succeeds Mr. Fleck as assistant manager of the division. **Roger M. Wolcott** was promoted to assistant to the vice president-engineering and plant at the Gateway Center offices in Pittsburgh. **John F. Pollack** succeeds Mr. Wolcott as superintendent of the open hearth at the Pittsburgh Works.

Richard L. Erlin was named manager of engineering sales for **Kaiser Steel Corp.** at Oakland, Calif.

Ralph Gambol was named general manager of **Watts Mfg. Co.**, Watts, Calif.

Charles A. Schmidt was made product sales manager for AB breakers at **Federal Pacific Electric Co.**, Newark, N. J. He was with Westinghouse Electric Corp.

OBITUARIES . . .

Frank J. Anderson, 56, manager of sales for the San Francisco sales district of **Bethlehem Pacific Coast Steel Corp.**, died Mar. 15.

Victor H. Spohn, 59, president, **Victor Steel Co.**, Euclid, O., died Mar. 22. He had been in the steel warehousing business since 1917.

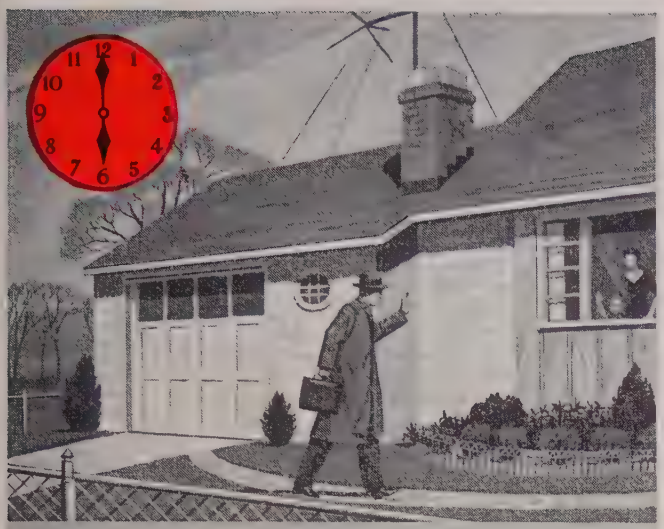
Robert W. Cramer, 60, founder and retired president of **R. W. Cramer Co. Inc.**, Centerbrook, Conn., died Mar. 10.

Leo F. Supple, 65, sales manager, **Standard Rolling Mill Division**, Revere Copper & Brass Inc., Brooklyn, N. Y., died Mar. 22.

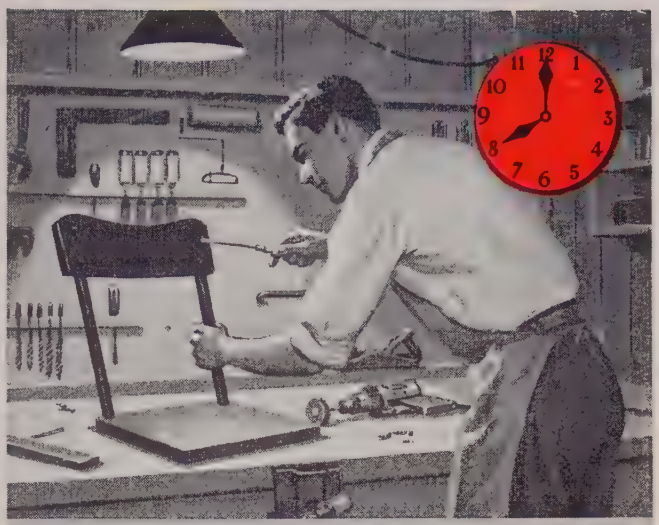
Frank H. Wieland, 56, superintendent of **Trico Products Corp.'s** plant in Buffalo, died Mar. 21.

Frank C. Baumeister, 63, purchasing agent at **Eureka Electrical Products Co.**, North East, Pa., died Mar. 21.

Harry B. Lilley, Detroit manager, steel sales division, **Timken Roller Bearing Co.**, died Mar. 24.



6:00 P.M.—HOME. This is John's house, of which he is justly proud. Note that a sturdy chain link fence protects his privacy and property. On his windows you'll find insect wire screening. Springs on his doors. TV Guy Wire on the roof. Flower bed borders in his garden.



8:00 P.M.—WORKSHOP. John is a "do-it-yourself" man. This is his workshop. He probably doesn't realize it but the screw driver he's using is made from wire. The wire brush on his buffing wheel and the handle on the paint roller, too. And, of course, indispensable nails and screws.

round the clock with
CF&I-WICKWIRE WIRE

9:30 P.M.—LIVING ROOM. Here, we see John relaxing in the comfort of his living room, where wire is used in many forms. Upholstery springs in his furniture. Wire in his TV set. Lampshade wire and picture cord wire. Even the screen in front of his fireplace is made of wire.

In our previous advertisements we have highlighted the importance of CF&I-Wickwire Wire in the daily life of John Q. Citizen. Here, at the end of a busy day, we find him returning home.

For the Wire You Require—
Check CF&I-Wickwire

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
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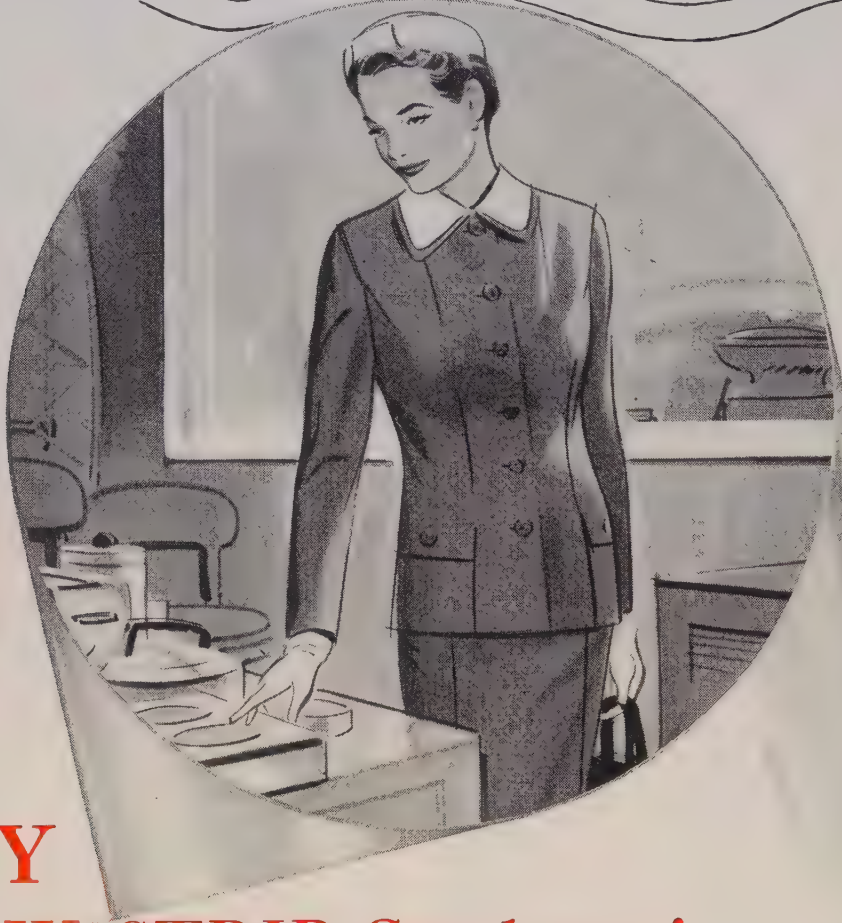
2737

BUILDS EXTRA SELLING POWER INTO YOUR PRODUCTS



THEY *buy* A.W. STRIP *Steel, too!*

(Hot and cold rolled)

'They' are the people who buy products made with ALAN WOOD strip steel. 'They' are housewives, children, manufacturers—you and I.

Perhaps they can't always *see* the superior qualities derived through precise, metallurgical control and "custom-production" of strip steel—but they *do* know these qualities must be present—because of the product's strength, dependability and reputation.

If you require strip steel, your products deserve the "custom-produced" qualities of superior strip . . . for minimum waste . . . less wear and tear on tools . . . easier, faster production. They deserve ALAN WOOD strip steel.

For products requiring hot or cold rolled strip or sheets, call upon the services of a versatile, integrated steel specialist with modern, up-to-date, continuous mills—where steel is produced to your specific requirements—ALAN WOOD STEEL COMPANY.

IRON PRODUCTS
"Swede" *pig iron*
STEEL PRODUCTS
Plates (sheared)
Hot rolled sheets
Hot rolled strip
Cold rolled sheets
Cold rolled strip
ROLLED STEEL FLOOR PLATE
A.W. ALGRIP *abrasive*
A.W. SUPER-DIAMOND *pattern*
A.W. CUT NAILS
MINE PRODUCTS
COKE
COAL CHEMICALS

ALAN WOOD STEEL COMPANY

steelmasters for 129 years • CONSHOHOCKEN, PENNA.

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A. C. Leslie & Co., Limited

SM-39

Republic Expands

Its Gadsden, Ala., plant will make hot, cold-rolled and galvanized sheets

MAJOR EXPANSION of Republic Steel Corp.'s plant at Gadsden, Ala., has the approval of the company's directors. Hot and cold-rolled sheets (in coils or cut lengths) and continuous galvanized sheets are to be produced there.

The facilities will establish Republic as an important source of sheets in the Southeast and will stabilize operations at the Gadsden plant, which have been sporadic in recent months. Demand for large diameter gas transmission pipe, a major product of the plant, has been fluctuating.

Equipment to be installed includes a continuous, 54-in., hot-strip mill, a continuous, 54-in., 3-stand tandem cold mill, a 54-in. temper mill, a continuous pickle line and annealing furnaces. Also included are finishing, shearing and shipping equipment and a 48-in., continuous galvanizing line. This equipment will permit the production of hot, cold-rolled and galvanized sheets up to 48 in. wide.

Rolling capacity in excess of present needs is provided. But Republic believes that its entry into this field not only will greatly expand the use of steel sheet by present manufacturers but will also encourage more fabricating companies to go into business in the Southeast. When full rolling capacity is reached, present steel ingot capacity at Gadsden undoubtedly will be supplemented.

Westinghouse Adjusts Prices

A new price policy on heavy electrical apparatus requiring long periods to manufacture was initiated in March by Westinghouse Electric Corp., Pittsburgh. The policy adjusts prices according to a formula incorporating monthly costs of material and labor as reported by the U. S. Bureau of Labor Statistics. For adjustment purposes, the proportion of the contract price representing materials is figured at 35 per cent and the portion representing labor 55 per cent.

Westinghouse's former policy adjusted the original order price to a stated maximum percentage of the price in effect at the time of shipment. The new price adjustment policy may be applied by customers to orders and contracts which date back to Dec. 1, 1954.

The new price policy covers heavy rotating equipment, such as large turbine generators, waterwheel generators and synchronous condensers. Also included are large power transformers and large circuit breakers.

Sundstrand Forms Division

Sundstrand Hydraulic Division is now a separate entity, with its own management and facilities, says L. H. Schuette, vice president, Sundstrand Machine Tool Co., Rockford, Ill. Production of fuel units for precision hydraulic products is in full swing in a 106,000-sq-ft plant, at 2210 Harrison Ave., Rockford. A. H. Swenson is manager of the new division; R. W. Roper, manager of manufacturing. Sundstrand Aviation Division, maker of constant speed drives for the aircraft industry, is expanding its production facilities.

Air Products Adds New Line

Air Products Inc., Allentown, Pa., offers equipment for coke oven gas purification. Coke oven gas is used to produce ammonia synthesis gas in European practice.

Air Products acquired the technical know-how through an exclusive agreement with Dutch State Mines of Holland. Dutch State Mines is a principal manufacturer of ammonia synthesis gas from coke oven gas. It builds and operates low-temperature processing equipment for this purpose.

Sandvik Steel Building Plant

Sandvik Steel Inc., New York, suppliers of specialty strip steels, is building an 85,000-sq-ft plant in Fair Lawn, N. J. It will provide space for consolidation of the company and its four divisions in one central location. Present facilities are situated in three different places. Sandvik's divisions include conveyor, saw and tool, spring and carbide-tipped tools divisions. Facilities, to be installed early this spring, will be provided for rolling and slitting strip steel, manufacturing springs, fabricating steel belt conveyors and warehousing all Sandvik products.

Kaiser Metal Reorganizes

Under a reorganization program, Kaiser Metal Products Inc., Bristol, Pa., has combined its aircraft and commercial divisions. Duties of several key executives have been realigned. F. H. Bechill now is vice president and works manager; R. L. Collett, vice president in charge of sales and engineering; J. L. Hallett, vice president-production. Paul C. Meyer remains as vice president-administration, with additional duties resulting from the consolidation.

Producto Opens Warehouse

Producto Machine Co., Bridgeport, Conn., opened a branch assembly warehouse at 214 Rock Hill Rd., Bala Cynwyd (Philadelphia), Pa. J. Brandon Shaw is manager of the branch which will stock and assemble Producto die sets, as well as a complete line of die accessories, including guide pins and bushings, dowel pins, chrome-vanadium die springs and feeding equipment. The branch also will carry Producto machine vises and hand tapping machines.

Western Metal Buys Fabricator

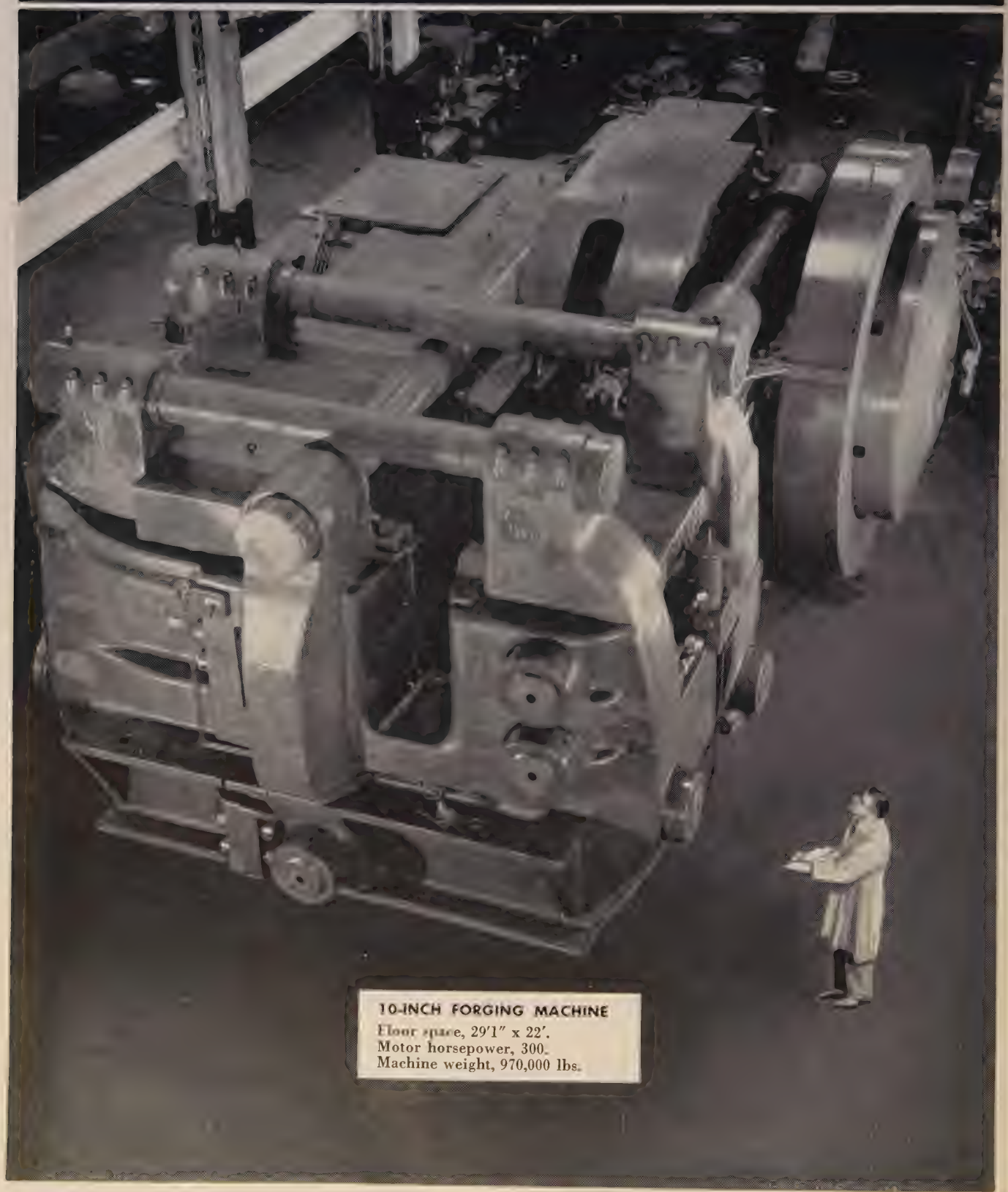
Western Metal Specialty Co., Milwaukee, purchased Crippen Machine & Tool Co., Jackson, Mich., producer of small, deep-drawn and fabricated fuel tanks. In addition, the two companies can supply steel stampings, fabricated and assembled sheet steel parts.

Plans Porcelainizing Plant

Whirlpool Corp., St. Joseph, Mich., will build a porcelainizing plant in that city at an estimated cost of $2 million and will add 50,000 sq ft to present production area. The new plant facilities will be used for applying porcelain enamel to component parts for au-

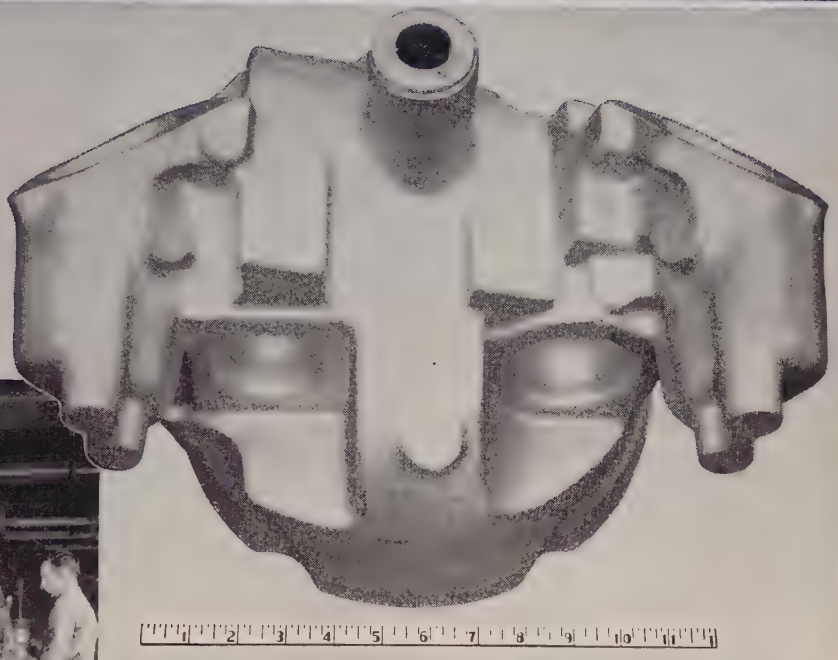
(*Please turn to page* 66)

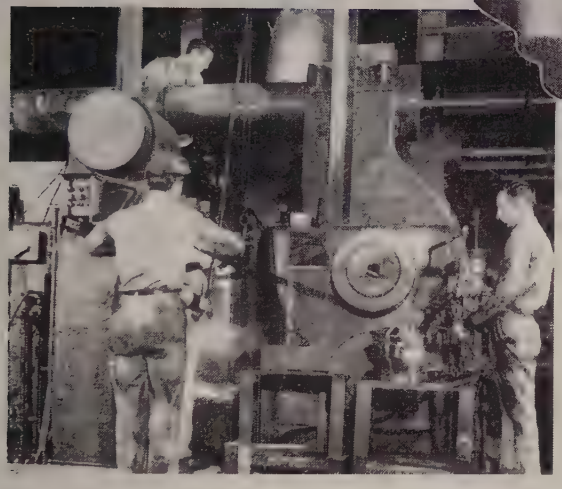
TUBE TURNS INSTALLS the World's Largest



10-INCH FORGING MACHINE
Floor space, 29'1" x 22'.
Motor horsepower, 300.
Machine weight, 970,000 lbs.

A 10-INCH NATIONAL . . . Horizontal Forging Machine!





◀ Forging aircraft engine cylinder heads at Tube Turns.

Tube Turns of Louisville, Ky., relies upon a 10-inch National — the largest horizontal forging machine in the world — to produce efficiently the 72-pound aluminum aircraft engine cylinder head forging illustrated above.

The progressive Tube Turns organization — a division of National Cylinder Gas Company — has long been recognized for its leadership in producing important commercial and aircraft forgings. The installation of the 10-inch Forging Machine is another step in the company's progress.

This is another example of teamwork between forward-looking industry and National Machinery to develop advanced forging methods. To help you "flow metal," our years of experience are available to apply to your forging job, be it routine or unusual, hot or cold, ferrous or non-ferrous, automatic or semi-automatic.

We would be pleased to welcome you at our plant — "World Headquarters for Forging Engineering" — where tomorrow's new and better ways of producing metal parts are already being tested today!

NATIONAL
MACHINERY COMPANY
TIFFIN, OHIO — SINCE 1874

DESIGNERS AND BUILDERS OF MODERN FORGING MACHINES ◦ MAXIPRESSES ◦ REDUCEROLLS ◦ COLD HEADERS ◦ BOLTMAKERS ◦ NUT FORMERS ◦ TAPPERS ◦ NAILMAKERS

Hartford Detroit Chicago

World's largest stocks of

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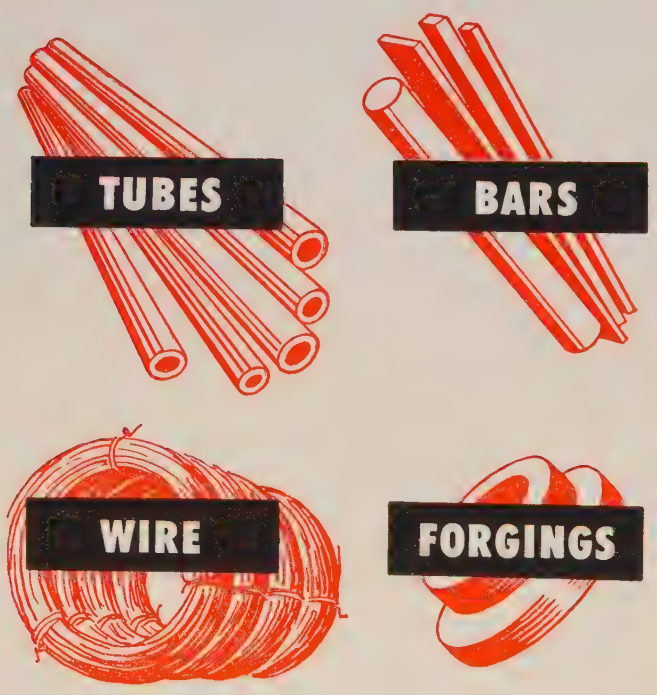
STEEL TUBING and BARS



Write for the latest stock list

Contact our nearest office or write to Peterson Steels, Inc., Springfield Road, Union, New Jersey. Address: Dept. S

PETERSON STEELS, INC.

UNION, NEW JERSEY

Detroit, Michigan · Chicago, Illinois

(*Concluded from page* 63)

tomatic washing machines and clothes dryers. They will supplement similar facilities of the Whirlpool plant at Clyde, O. Eventually, the company will eliminate the outside purchase of porcelain parts used in Whirlpool home laundry appliances.

Rheem Builds Fabricating Shop

Rheem Mfg. Co., New York, will construct a 14,000-sq-ft fabricating shop at its Richmond, Calif., plant to produce underground storage tanks and other specialty products. Rheem produces steel and fiber shipping containers, boilers and shells at its Richmond plant.

Denison Opens Branch Office

Denison Engineering Co., Columbus, O., officially opened its Midwest regional branch office at 7000 W. 63rd St., Chicago. This is a major step in the firm's program for decentralization of sales. The branch will have a wide inventory of all Denison products, including presses, press accessories, fluid motors, pumps and valves.

SKF Acquires Tyson

SKF Industries Inc., Philadelphia, acquired controlling interest in Tyson Bearing Corp., Massillon, O. Tyson manufactures a line of tapered roller bearings of a type not produced by SKF. Operations at Massillon will continue under present management.

Lockheed Buys Auto Plant

Lockheed Aircraft Corp., Burbank, Calif., purchased the Willys automobile plant in Maywood, Calif., to handle increased production. The plant has more than 350,000 sq ft of factory area and will be used for precision assembly and subassembly operations.

Barry Corp. Changes Name

Barry Corp., Watertown, Mass., changed its name to Barry Controls Inc. Established 11 years ago as a "war baby" making shock isolators for the Navy, Barry is intensifying its penetration of the

HERESITE

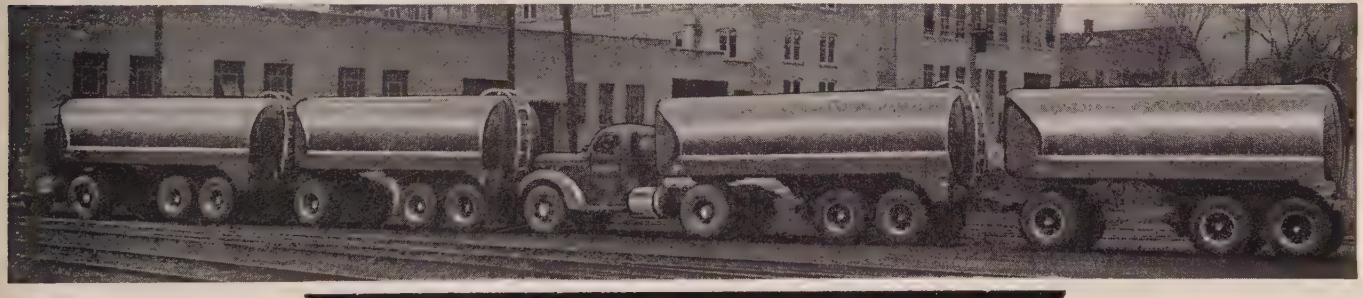
REG. U. S. PAT. OFFICE

LININGS FOR TANK CARS AND TRAILER TANKS

Courtesy Hooker Electrochemical Co.

RESISTANCE—Heresite linings effectively prevent product contamination of such items as Sulphuric Acid, Rubber Latex, Formaldehyde, Battery Acid, Lactic Acid, Acetic Acid, Fruit Juices and Wine. These products can be delivered fresh and full strength, unchanged.

EASE OF CLEANING—Heresite lined tank cars are quickly cleaned by Steaming, Hot Water, or any type of Solvent Wash.



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SYNTHETIC RUBBER LINING

The strongest caustic hydroxide solutions, as well as the halogen acids and other chemicals, may be transported in a HERECROL lined tank car or trailer tank. Our literature will interest you. Write for it today.

HERESITE & CHEMICAL COMPANY

MANITOWOC, WISCONSIN

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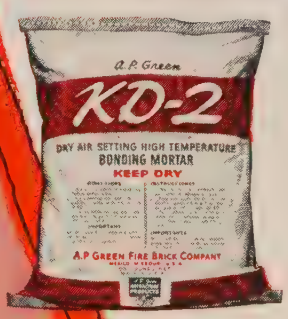
'SAIRSET

For the past 28 years, 'SAIRSET has been recognized as the finest quality air-setting, high temperature bonding mortar on the market. It forms a thin, airtight joint and bonds all types of firebrick into a one-piece unit at all temperatures. The high refractoriness of 'SAIRSET guards against fusion or softening of the joints ... increasing the service of the firebrick.

A. P. GREEN BONDING MORTARS

ADD EXTRA LIFE AND PROTECTION TO FIREBRICK LININGS . . . REDUCE DOWN-TIME



KD-2

An air-setting, high temperature bonding mortar that will not fuse or soften in the joints. KD-2 develops excellent plasticity and workability immediately on mixing — no long soaking period required. Gives maximum protection because it does not shrink . . . there are no cracks for flame and slag to attack. KD-2 is shipped dry and will not freeze, deteriorate or lose its working and bonding characteristics in storage.

DIAMOND-JO

A dry, heat-setting high temperature mortar for laying firebrick. DIAMOND-JO is free from joint shrinkage or expansion . . . provides strong airtight joints at high temperatures . . . recommended for temperatures above 2000° F. It is ground extremely fine . . . makes thin brick-to-brick joints.

FOR SPECIFIC RECOMMENDATIONS, without obligation, on your refractory problems or requirements, call your local A. P. Green distributor . . . he is listed in the yellow pages of your telephone directory . . . or write direct.

A. P. Green REFRACTORY PRODUCTS

SERVE THE WORLD'S INDUSTRIES

A. P. GREEN FIRE BRICK COMPANY

Mexico, Missouri, U. S. A.

PLANTS: Mexico, Mo. • Woodbridge, N.J. • Sulphur Springs, Texas

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DISTRIBUTORS IN THE PRINCIPAL CITIES OF THE WORLD

peacetime industrial market with engineering mountings to control noise and vibration for products ranging from machine tools to dictaphones.

Alvey-Ferguson Buys Firm

Alvey-Ferguson Co., Cincinnati, acquired Cincinnati Automatic Conveyor Co., that city.

Trailer Co. Builds Plant

Utility Trailer Mfg. Co., Los Angeles, trailer builder, started construction of the first unit of a $1-million plant near Puente, Calif. Floor space in the first building will cover 50,000 sq ft. Additional building will include 60,000 more sq ft. The first building is scheduled for completion about May 15; the complete building program should be finished by the end of 1956.

Tank Works Enlarges

Portland Copper & Tank Works Inc., Portland, Me., has added 21,000 sq ft of production space. The plant expansion program included installation of an annealing oven operating to 2400° F. Portland fabricates stainless steel and alloys for aviation and industrial equipment, dye vats, pipe and fittings, heat exchangers and copper and steel vessels.

Honan-Crane Changes Name

Honan-Crane Corp., Lebanon, Ind., changed its named to Houdaille-Hershey of Indiana Inc. Houdaille-Hershey Corp., Detroit, will establish a filtration division in its Lebanon subsidiary and will strengthen research, engineering and production facilities.

VEA Chemical Opens Lab

Vea Chemical Co., Cleveland, manufacturing chemists, opened a new laboratory to further research and development of nickel.

Weirton Installs Furnaces

Weirton Steel Co., Weirton, W. Va., is installing three new slab reheating furnaces. Each

(*Please turn to page* 72)

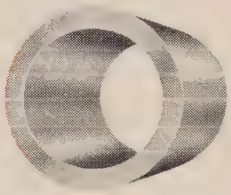
looking for the right tube in

WELDED STAINLESS?

Check Standard's Complete Range of tube and pipe sizes!

Whether it's for a pressure, mechanical, sanitary or ornamental use — Standard offers you a convenient "one source" answer to your welded Stainless Steel Tubing need.

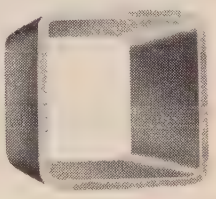
TUBE SIZES: ¼" to 4" OD .025 to .148

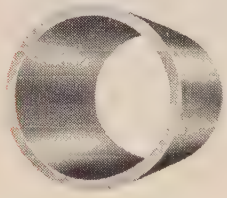


PIPE SIZES: ⅛" to 2" IPS Schedule 40

TYPES: 430, 302, 304, 309, 316, 321, 347; and others including low-carbon grades.

SHAPES: Squares, Rectangles and Special Shapes





PIPE SIZES: ⅛" to 4" IPS Schedules 5 & 10

Send for Stainless Folder! Our engineers will gladly assist you in your selection of the tube best suited to your needs! Write today!

Specify Standard for

- WELDED STAINLESS TUBING AND PIPE
- WELDED CARBON STEEL MECHANICAL TUBING
- BOILER AND HEAT EXCHANGER TUBING
- EXCLUSIVE "RIGIDIZED" PATTERNS

Has your selling program this plus factor needed today?

+ + + + Your selling efforts in metalworking take on added strength when you put STEEL's new sales aids to work!

Let's say you have a good product. Your sales force is substantial. You're adequately tooled up to do a selling job. An almost unbeatable combination.

But, this one essential factor may be missing:

Latest market information you need for most effective sales direction geared to today's potentials!

For example, take STEEL's comprehensive planning guide, "Metalworking Markets in the U.S.". It will help you . . .

1. Establish a workable blueprint for greater sales
2. Re-check sales territories based on new information
3. Channel your sales efforts in big-potential areas
4. Pinpoint your best sales possibilities by products, plants and operations

It's based on a continuing flow of census data STEEL itself uses to make sure its editorial content reaches the greatest concentration of buying power in the industry—key men at *every management level* responsible for more than nine-tenths of all metalworking business!

Talk to the man from STEEL about this unique "sales finder" and other new market data he'll gladly share with you. STEEL, Penton Building, Cleveland 13, Ohio.

BUILD THE STRENGTH OF STEEL INTO YOUR SELLING PROGRAM

. . . Edited for metalworking men at every management level

NICKELOID METALS

more than a metal!

You by-pass 3 out of 5 basic production steps . . . . cut costs 15 to 20 per cent or more when you use the Nickeloid Method of producing plated metal parts and trim. That's because Nickeloid Metals are PRE-plated in durable, uniform finishes of chrome, nickel, copper or brass; require no cleaning, plating or polishing.* And you don't have to pamper these versatile metals to retain their beautiful mirror-like finishes. Stamp, blank, bend or draw . . . they fit right into standard production techniques.

The Nickeloid Method eliminates three costly steps

No cleaning, plating, polishing. Just fabricate and assemble. 2 steps instead of 5! Nickeloid Metals are also available with Mar-Not protective coating, a fabrication and handling aid.

*Pre-plated to base metals of steel, zinc, copper, brass and aluminum. Available in sheets and coils, interesting patterns and finishes.

SEND FOR FREE SAMPLER-SELECTOR

In handy slide-chart form, gives specifications, finishes and typical uses of Nickeloid Metals. 8 metal samples. Request yours, on your company letterhead.

NICKELOID METALS SINCE 1898

Sales offices in most principal cities

AMERICAN NICKELOID COMPANY, Peru 1, Illinois

(*Concluded from page* 69)

will reheat 200 tons of steel slabs to rolling temperature per hour. The furnaces are about 118 ft long and wide enough to heat 26-ft-long slabs. Completion of the furnaces, part of an extensive modernization of the continuous strip mill at Weirton occurred in March.

Oxy-Catalyst Opens Branch

Oxy-Catalyst Inc., Wayne, Pa., opened an office at 6331 Hollywood Blvd., Los Angeles. The firm develops and manufactures catalytic devices for air pollution control and waste heat recovery. Alfred I. Bratton is manager of the office.

Armco Expands Plant

Armco Drainage & Metal Products Inc., a subsidiary of Armco Steel Corp., Middletown, O., is adding 44,000 sq ft of working space and new fabricating equipment to its plant at Washington Court House, O. This will be the fourth round of expansion since the plant was built in 1950. Continued rise in the sale of prefabricated steel buildings called for the $500,000 expansion.

H. P. Townsend Buys Firm

H. P. Townsend Mfg. Co., Hartford, Conn., bought the Cleveland Tapping Machine Co., Canton, O., from Automatic Steel Products Inc., also of Canton. No change in name or location is contemplated. The Cleveland Tapping Machine Co. will continue its line of standard and special lead screw tapping machines and will expand its development of special machinery.

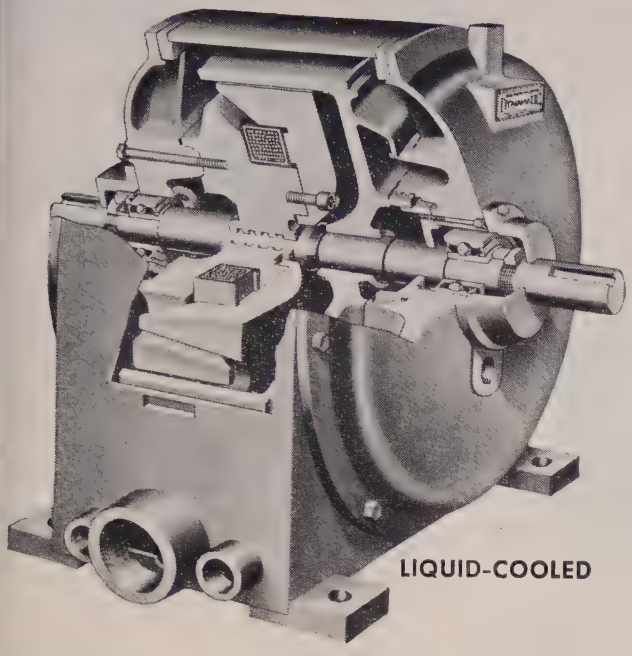
Inland Builds in Loop

Inland Steel Co., Chicago, will start construction of an all stainless steel office building in Chicago's Loop this fall. The 19-story, $6-million structure will be completed by the fall of 1957.

Parker-Kalon Modernizes

Parker-Kalon Division, General American Transportation Corp., Chicago, will build a 250,000-sq-ft, single-story manufacturing plant

There are Hundreds of Uses for



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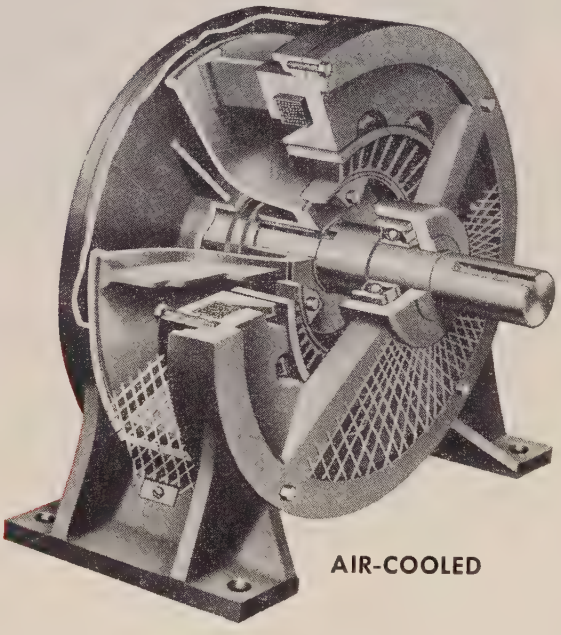
DYNAMATIC®

EDDY-CURRENT BRAKES

Wide range of torque capacities and operating speeds. Smooth, frictionless, shock-free operation. No rotating electrical components or contacts. Electronic or magnetic amplifier control from AC power.

Here Are Some Suggestions

Providing constant tension or constant linear feet per minute speed for unwind stands in metals, fabric, plastic, and paper industries.



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THE BUNTING BRASS & BRONZE COMPANY, TOLEDO 1, OHIO
BRANCHES IN PRINCIPAL CITIES

in Clifton, N. J. The plant will house production facilities now in New York. Completion is scheduled for December, 1955. Parker-Kalon makes metal fasteners for industrial applications.

NEW ADDRESSES

General Controls Co., Glendale, Calif., manufacturer of pressure, temperature, level and flow controls moved into a new regional sales office at 1479 Spring St. N. W., Atlanta.

Strom Machinery Corp., rebuilders, leasers and sellers of heavy equipment, moved to 1818 Summer Blvd., Hammond, Ind.

REPRESENTATIVES

Amerigear-Zurn Inc., Erie, Pa., appointed Medor Inc., St. Louis, sales representative for flexible couplings and allied power transmission products made by American Flexible Coupling. Medor's territory includes southern Illinois, eastern Missouri and the southwestern tip of Kentucky.

Equipment Engineering Co., Minneapolis, appointed Thomas Hood, of Hood Engineering Sales Co., San Francisco, and Walter S. Eschbach, of Sierra Industries Inc., Los Angeles, representatives for variable speed mechanisms.

Hyster Co., Portland, Oreg., appointed Miller Equipment Co., Grand Rapids, Mich., dealer for western Michigan. Miller will handle a complete line of lift straddle and platform trucks, plus mobile cranes.

Gas Machinery Co., Industrial Furnace Division, Cleveland, appointed Heat & Control Inc., San Francisco, its western representative. It will cover California, Oregon, Washington, Arizona, Nevada and Idaho.

Reynolds Metals Co., Louisville, appointed Perry Kilsby Inc., Los Angeles, distributor of aluminum pipe and tubing.

"Maybe we'd better scrap some of our ideas about scrap?"

DO YOU think of your scrap in terms of material costs only? Actually it's the time and labor that have been wasted upon it that is really costly.

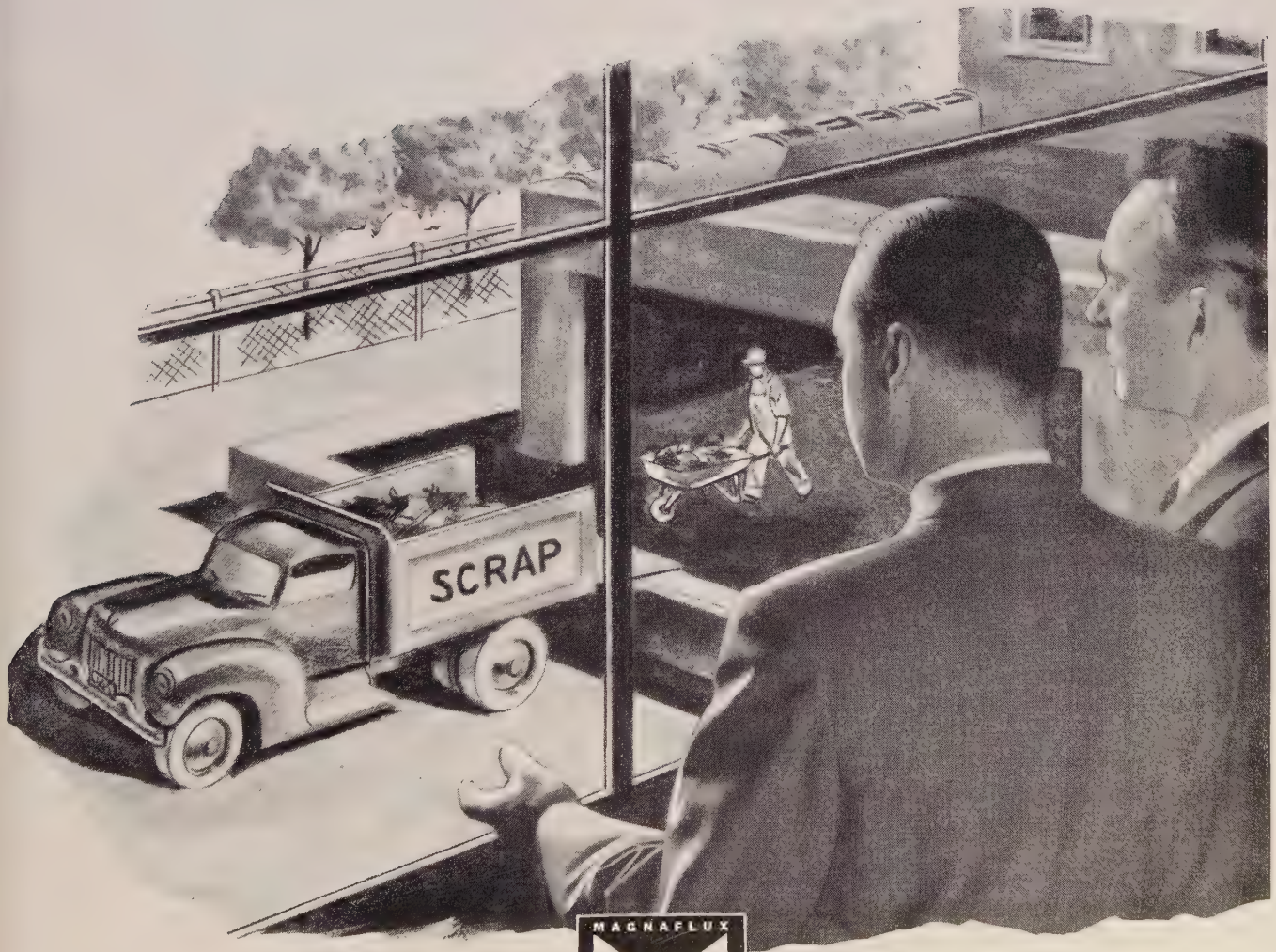
Accepting an arbitrary rejection rate as inevitable, is expensive and usually unnecessary. The solution is often so simple it can be easily overlooked.

This may be the solution

Cracks in parts are one main cause for scrapping. When these cracks are not discovered until after machining or at final inspection, time spent in processing the parts is a dead loss!

Inspection with Magnaflux' Methods finds all cracks—from whatever cause—at any stage of manufacture. By finding cracks early you can correct the cause before parts are run in quantity. Result: almost no time or money is wasted on defective parts.

Inspection with Magnaflux is fast and cheap—saves many times its trifling cost. Ask to have a Magnaflux engineer show you how it can cut *your* costs—or write for new booklet on LOWER MANUFACTURING COST.



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This "editorialized message" was written after learning the results of an extensive survey recently made by another organization.

LAPOINTE the name that is known in BROACHING

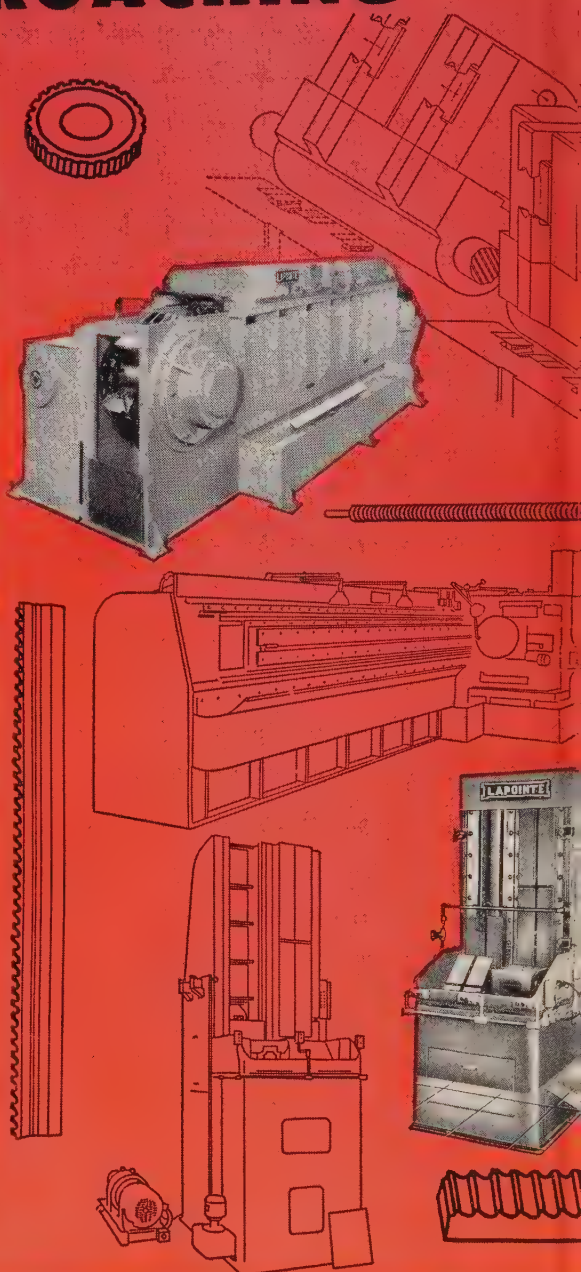
In any industry, there's always one manufacturer's name that stands out — that comes to mind *first* when you think about that industry. You know this is true. You can think of several, right now, without half trying.

In the field of broaching, men for a great many years have put Lapointe at the top of the list in this matter of name recognition. That may be caused partly by Lapointe's age, for Lapointe did indeed pioneer the development of broaching 53 years ago. Or it may be caused partly by Lapointe's size, for Lapointe several times has been forced to substantially increase its plant, this physical growth placing Lapointe always in the "number one" spot as the world's largest manufacturer of broaching machines and broaches.

But age and size alone do not necessarily constitute leadership, or assure that yours will be the name that is known. Here at Lapointe we like to think that it comes from the capable, loyal organization that has been built up through these many years of making broaching equipment exclusively. Our engineers and our plant personnel live in the atmosphere of broaching. And this activity embraces the entire broaching process — including not only the machines and tools but also the designing and building of the all-important fixtures that so often make the difference between success or failure in a particular broaching application.

It is this engineering experience, this ingrained and intuitive "broaching sensitivity", that keeps Lapointe at the top of the list.

We realize that no amount of advertising could accomplish that result. No, it's the quiet recognition and acceptance by important men in industry who *know broaching,* that makes Lapointe "the name that is known." We are grateful for this, and we intend to keep it that way.



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HUDSON, MASSACHUSETTS • U. S. A.
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THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

Technical Outlook

DELAYED FAILURE— An amount of hydrogen too small to affect reduction of area or notch strength may cause delayed failure in such parts as steel bolts and studs. That's what James W. Huffman, North American Aviation research engineer, reported to an ASM session at the Ninth Western Metal Congress in Los Angeles last week. Preventive measures recommended: Prohibition of pickling and cathodic cleaning, stress relief following grinding, use of fluoborate cadmium plating bath and prolonged baking.

SWIFT SWITCH—Contacts at a rate of 10,000 a second are possible with a drum-type switch. A whirling jet of mercury inside the drum causes a traveling deformation of the circumference, so that it makes fleeting contact with switch elements arranged around the outside. Noise level is low.

INSIDE THE GRAIN— A lot of work has been done on the effect of grain size on the physical properties of metals, but what about the structures within the grain? Dr. Raymond Smith of the Franklin Institute points out that at low temperatures internal grain structure has a significant effect on stress-yield strength.

RINGS THAT BREATHE—Hollow metallic O-rings with breather holes drilled through the inside diameter won't collapse because of internal-external pressure differences. United Aircraft Products Inc. says this feature keeps them leakproof at elevated pressures.

ELECTRIC FURNACE RECORD—Production figures representing good electric furnace practice aren't often available, but Atlantic Steel Co., Atlanta, supplies the following: Average heat size in 1954 was 76.4 tons; 135,151 ingot tons were produced in 8135 operating hours out of an available total of 8760. Average: 16.6 net tons per hour. Electrical consumption averaged 500.3 kwh per net ton; electrode consumption was 9½-lb per ton of ingots. Yield was 91.4 per cent.

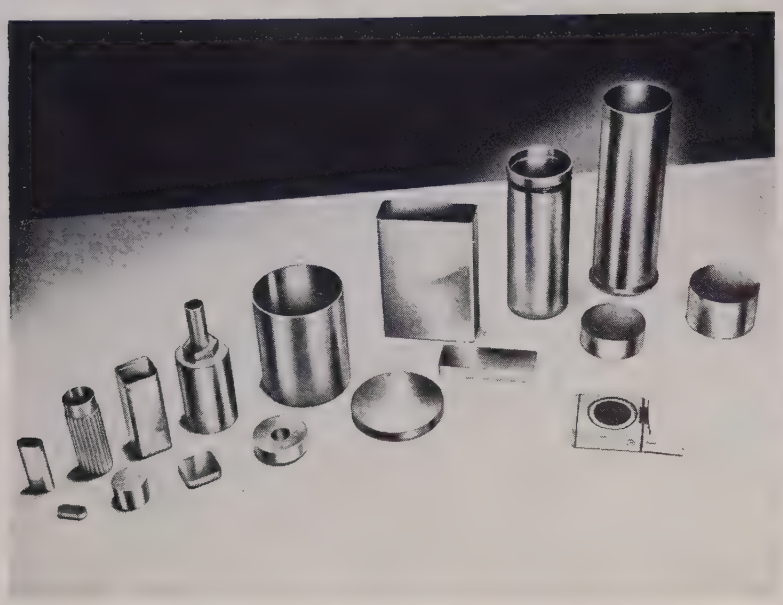
METALLIZING MERRY-GO-ROUND— Twenty-two, self-contained, vacuum-metallizing units moving around an oval course have soothed a production headache at RCA's Marion, Ind., plant. One man loads and unloads TV picture tubes that get their insides coated with 0.5 microns of aluminum at the rate of 120 an hour.

STURDIER DIAMONDS— A new method of diamond mounting can add up to 9 times more life to diamond tools. The diamond is brazed to the tool under vacuum, argon or hydrogen atmosphere, using a silver-copper solder and titanium hydride as a wetting agent.

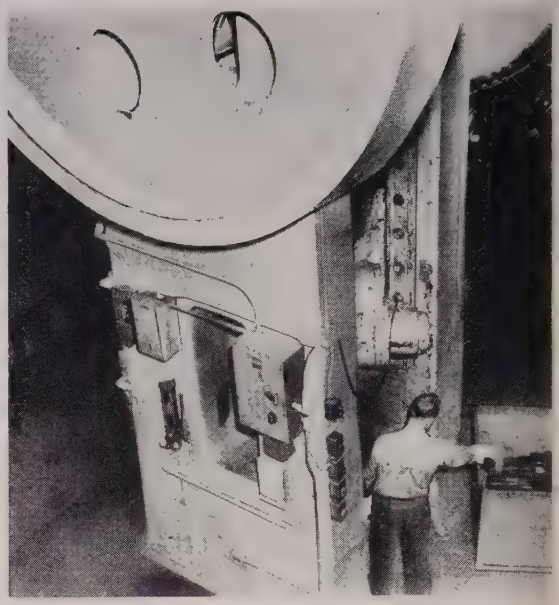
ALUMINUM NAMEPLATES—Several of the large aircraft manufacturers have gone to porcelainized aluminum nameplates for use on aircraft engines. Comparable in cost to painted plates, they are completely resistant to heat and corrosion which deteriorated tags previously used.

HIGH-SPEED DIP—United Chromium, Inc., says it has a new plastisol coating that can be applied at more than double the rate of previous materials—dipping speed is 17 to 18 in. per minute with automatic equipment. Pearless Wire Goods, Lafayette, Ind., is using the coating on freezer baskets and shelves (in pastel shades of coral and light green) to protect against abrasion and corrosion caused by humidity, moisture and foodstuffs.

Metalworking Outlook—p. 29 Market Outlook—p. 125



Parts illustrate complex shapes, beaded and fluted sides, bosses, recesses, projections and variations of bottom and side wall thickness



Magcoa recently installed this additional 750-ton press as part of its impact extrusion facilities

Impact Extrusion—

Put the Squeeze on Parts Costs

From its early days of punching out toothpaste tubes, the forming process has taken on a broader dimension. Complex magnesium parts are one-shot items

By WM. F. DEAN
Associate Editor, Chicago

AS IN GRAPEFRUIT eating, the controlled "squirt" is the key to successful impact extrusion.

Basically, impact extrusion is the combination of cold or hot forging and conventional extrusion of extrudable nonferrous metals. The "squirt" in this case is the flow of metal created when a punch rams down onto a blank placed in a shallow die and the metal is forced up and around the punch.

Increasing efficiencies in impact extrusion techniques are creating interest among manufacturers requiring complex round, square, rectangular, cup or shell-shaped parts or simple parts having a length - diameter ratio exceeding 2:1.

Three Types—Generally speaking, there are three types of impact extrusions, says Nolan E. McDonald, manager of the impact extrusion department, Magnesium Co. of America, E. Chicago, Ind. They are classified as to direction of metal flow:

1. Conventional or reverse extrusion in which the metal flows upward around the punch and opposite to the punch's direction of travel.

2. Forward or Hooker extrusion in which metal flows ahead and in the same direction of the punch travel.

3. Lateral extrusion in which the metal flows sidewise or at 90 degrees to punch travel.

Each of the above three types can be used individually or in combinations, depending upon the job to be done.

Dense, Nonporous—Impact extrusions with their forged bases and extruded side walls have desirable wrought metal characteristics. They are dense and nonporous, and better than average physical properties are generally attained. The smooth surface of the impact extrusion can be dipped, polished, satin finished, enameled, lithographed or lacquered. Aluminum pieces can be anodized to provide a harder oxide protective surface.

With the exception of collapsible tube production, impact extrusions have had their greatest development in the postwar years—improvement in tool steels has played an important part. Proponents are predicting a steady increase in the use of impact extrusions in the electronic, aircraft, automotive and appliance industries.

The Reason—Where impact extrusions are applicable, substantial savings are possible over conventional methods of part production.

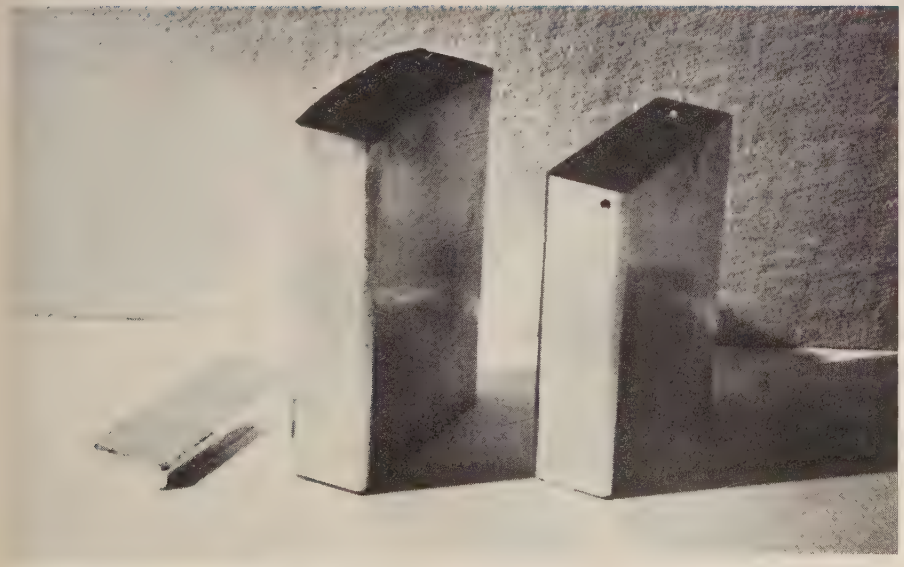
Magcoa officials, who are expanding their facilities to produce impact extrusions in magnesium,

Here's What Impact Extrusion Did on One Job

The initial blank is a trimmed-to-length section of conventional extruded tubing. The finished part is 11.375 in. long (trimmed) and has an OD of 6.5 in. Note the section view (right) has six different wall thicknesses. From top to bottom: 0.062 in., 0.240 in., 0.800 in., 0.710 in., 0.150 in. and 0.080 in.

Tolerances: ± 0.002 in. across the diameters
0.010 in. in length of steps
0.004 in. (total indicator reading) concentricity
0.010 in. maximum fillet and radius permitted on external steps

Cost Savings: Previous unit cost (machining part from extruded tubular stock) $163.00
Present unit cost (impact extrusion, no machining required) $19.25



A single stroke of the press produced this 1⅜ x 4 x 6½-in. can with sidewall thickness of 0.020 in. and bottom thickness of 0.032 in. Only secondary operations were trimming to 5⅝ in. length and hole punching

aluminum, lead, zinc, tin, copper and the alpha brasses, cite some examples.

An aluminum or magnesium can 3 in. in diameter, 24 in. long can be produced in a single press stroke by impact extrusion in six seconds. Tooling for the job would run approximately $750. By deep drawing, the same can—if it could be produced at all—would require tooling worth about $4000 and take at least four minutes to produce, officials estimate.

Good Tool Life—In high production runs, impact extruding also compares favorably with other processes. Tool life, according to officials, is roughly 500,000 units and then only die maintenance is needed—tools can be made up of replaceable inserts for economy. In very high quantity requirements, carbide dies would permit runs up to 5 million units.

On production runs of applicable products, the advantages of impact extruding over machining operations are striking: It's faster and results in greater metal yield.

Impact extruding can provide savings over processes which require welding on the part produced. Because beaded or fluted side walls, bosses, recesses and projections are possible in the one-stroke impact extrusion process, no welding is necessary.

Process Limitations—Impact extrusions aren't the answer to all fabricating jobs, though they are applicable in many cases. There are, however, circumstances where impact extrusions are imperative because production would not be mechanically or economically feasible by other processes:

1. When the design includes a bottom thickness considerably thicker than the side walls.
2. When the bottom must include bosses, projections or recesses.
3. When a bottom extending into a flange is required.
4. When side walls must have internal or external longitudinal ribs or flutes.
5. When short, open-end tubes are required which are not producible by direct extrusion or drawing.
6. Generally, when the length-diameter ratio exceeds 2:1.

Dream Come True

A HUNDRED years ago Henry Bessemer had a dream, but he had to settle for the next best thing. If he had been able to get high-purity oxygen in tonnage volume, it's a safe bet that the open-hearth furnace would not be the backbone of steelmaking.

What about open-hearth practice. Has it reached its peak? Talk to the people who are running the oxygen operations at Dominion Foundries & Steel in Canada and at McLouth Steel in Detroit. Pose the question to the many steelmakers who traveled to Austria for their first look at the process. The answer is an emphatic yes.

***The Plus Side*—At no time in steelmaking history has there been a process that is so right for the present and future economic climate. The key considerations: Low capital investment, a tons-per-hour rate nearly three times the open-hearth record and an operational flexibility that would lend itself to a five-day work week.**

Look at the product. In some 20 minutes from the start of the blow, you're ready to tap 40 tons of steel that would test perhaps 0.0020 nitrogen, 0.013 phosphorus and 0.020 sulphur. Oxygen costs about 50 cents per ton of metal. Its consumption is only 5 per cent greater than the theoretical requirements for the reaction.

***The Future*—Don't look for an immediate rash of oxygen vessel shop construction. The industry has too much capital tied up in modern open hearths to even consider retiring them. Interest in oxygen steelmaking may be running high, but the approach will be slow and a bit subtle.**

It will probably start with numerous installations of tonnage oxygen generators. Even in present practice, oxygen can be a helpful tool, so the expenditures will pay off. Great Lakes Steel, for instance, is planning an oxygen generating plant bigger than the one at McLouth. Weirton Steel has had its plant in operation a couple of years.

As the time comes for retiring open-hearth furnaces, oxygen meltshops will probably replace them. Sound a little fantastic? The people at Dominion and McLouth don't think so. And they ought to know better than anybody else.

DETROIT—When you're getting 600,000 ingot tons of production from a capital investment of $7 million, it's a pretty good deal. When you find that your ingot costs are down $3 a ton to boot, there's cause for celebration.

But McLouth Steel Corp., Detroit, is too busy making the first oxygen-converter steel in this country to be celebrating. Besides, its management knew pretty well what to expect two years ago when it decided to integrate the Austrian process into its steelmaking operations.

Similar Circumstances—The decisions of both Dominion Foundries and McLouth, the two oxygen-converter steel pioneers on this side of the Atlantic, stem from similar circumstances. Each acquired a blast furnace for hot-metal steelmaking. Each hoped to up the ingot output of existing equipment.

Where Dominion was charging hot metal into its open hearths, McLouth planned to blow the metal partially in bessemers, then finish the heats in its two, 200-ton

Oxygen

HAMILTON, ONT. — Anybody clinging to the notion that oxygen steelmaking hasn't arrived commercially can check with the people at Dominion Foundries & Steel Ltd., Hamilton, Ont. They're completely sold on the transplanted Austrian process.

You would be, too, if you were averaging about 1000 tons per day on a capital investment of $6 million. Even rosier, that output is better quality steel than Dominion produced in its open hearths. Ductility and drawability are better; there are fewer tears and less residuals. "We've never seen such good deep drawing steel as we're getting now," was the way one operating man put it.

Right from the Start—Dominion poured its first oxygen-steel ingots last Oct. 12. Subsequent heats have been rolled into tin mill products, plate, sheet and strip. Even when the company was operating a small pilot vessel, properties of the steel were so good that it became pre-

electric furnaces. Fortunately for McLouth, its interest was turned to the oxygen practice in Austria before it ordered its bessemer shop. The rest of the story takes place on the banks of the Detroit river just outside Trenton, Mich.

How's It Working? — The cat-that-ate-the-canary look on the faces of McLouth operating people is enough to answer that question. "Considering that most of our people had never even heard of this process, we've developed a lot of production know-how in a couple of months," commented Ivor Bryn, McLouth's vice president-operations.

In appearance, this shop is quite a bit different from the one at Dominion. For one thing, there are three, 40-ton vessels. Each is trunnioned at ground level, with the bulk of the vessel in the pit. This floor-level feature eliminates a lot of hot metal lifting and pouring by cranes.

The Cycle—Hot metal from McLouth's 1350-ton blast furnace rolls into one end of the melt shop in a bottle car and is positioned

McLouth charges hot metal from a ladle car, since vessels are mounted in pits. Hood and flux chute are to the right and above the tilted vessel

Steelmaking Arrives

By THOMAS F. HRUBY
Associate Editor

ferred tonnage among csutomers.

To date, Dominion's single 40-ton vessel has concentrated on production of 100-per-cent-rimmed, mild steel, with carbon content under 0.10 per cent. Pilot plant operations, however, proved the process feasible for silicon steel (up to 3 per cent), killed steel with up to 0.25 per cent carbon and fully aluminum-killed steels.

What It Takes—Dominion's oxygen melt shop is on its harbor property, immediately adjacent to the source of hot metal, a 900-ton blast furnace built in 1951. Though the shop was designed to ultimately house two operating blowing vessels, additional blast furnace capacity would be required. A single vessel can consume more hot metal than is available. While the company won't talk about it, its next move will likely involve a new blast furnace.

Charging of the vessel is similar to standard converter practice. About 25 per cent of the metallic

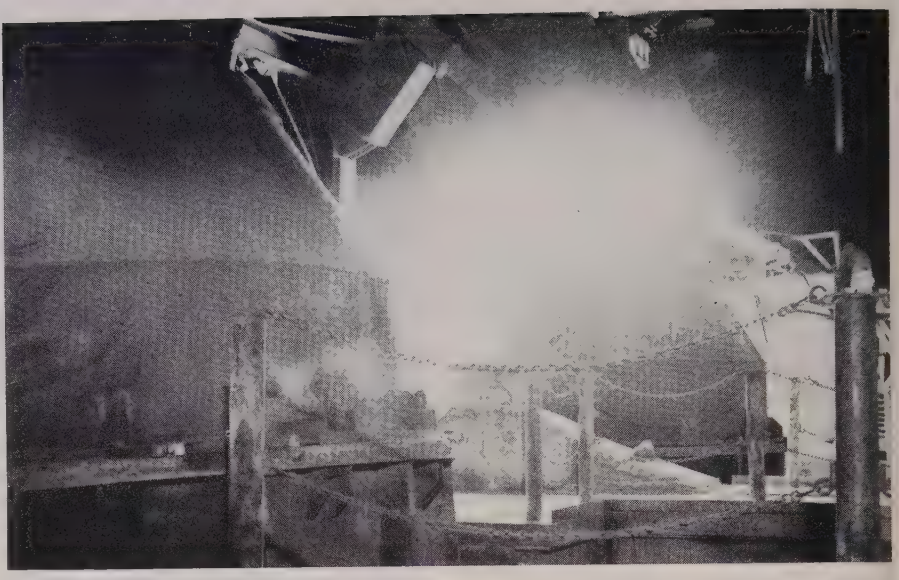
Vessel at Dominion is trunnioned on a platform above the meltshop floor, so hot metal must be crane-poured during the charging

McLouth—
on a weighing track. The exact amount of iron required for a heat is poured into the charging ladle in the pit beside the track. The ladle then is lifted into its pouring car which transports it along another track to the vessel.

Scrap has been added to the ladle by this time—the amount varies with the silicon content of the iron but averages close to 10 tons—and the ladle car tips its charge of hot metal directly into the tilted vessel. The ladle car moves back, and a flux car moves into position for charging the major portion of the stone.

No Dust—Each of the three vessels has its own exhaust hood which can be moved out of the way for maintenance on the vessel or the hood itself. Normally, the hood is positioned about 24 in. away from the vessel mouth, but this distance can be closed down to as little as 6 in., if necessary, for sufficient draft.

The first stage in the gas cleaner is a two-pass spark box. Its water vapor cools the gases down to 500° F. Next comes a tower-type washer in which the vapor is condensed on individual dust particles, followed by a 600-hp, Tyson disintegrator which does the rest. Gas enters the atmosphere as a billowy cloud of steam which quickly disappears.



While middle vessel is blowing, one at right is being relined. Vessel in the left foreground was due to start its campaign the next day, after a 24-hour heatup

Oxygen Plant — Believed to be one of the largest plants built for a user of oxygen, the Linde-Fraenkl system has a daily capacity of 165 tons. McLouth at first considered buying its supply of 99.5-per-cent pure oxygen, but the higher cost argued against it. With this plant, not counting amortization charges, the cost is under $6 a ton.

When the vessels are blowing, the drain on the oxygen plant is quite severe. An 8-hour supply in storage serves as a surge tank and provides emergency tonnage should the generator be stopped. It takes roughly 2000 cu ft of oxygen to refine a ton of metal, which

OXYGEN STEEL

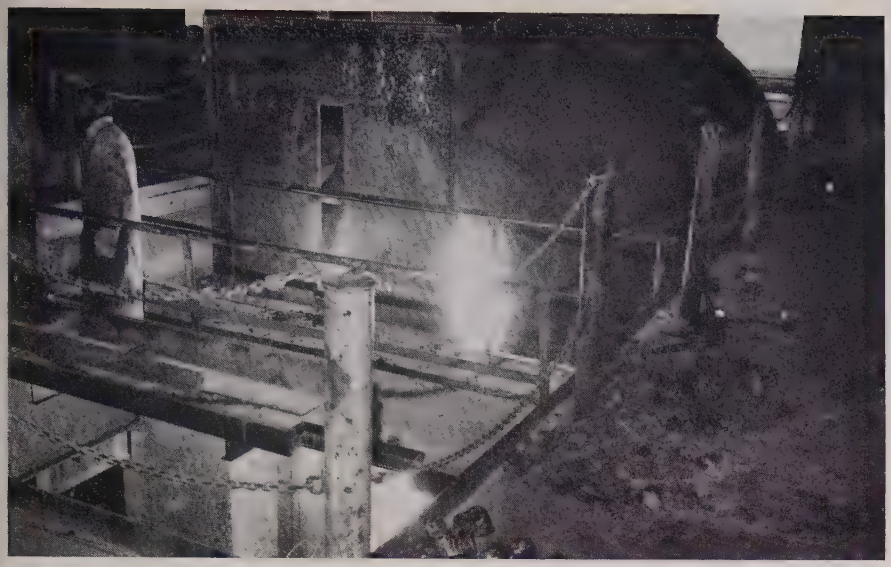
Dominion—
charge is scrap; the rest is hot metal. When the vessel is tipped back into its vertical blowing position, depth of the bath is about 36 in. in the 25-ft-high vessel. The copper, water-cooled oxygen lance is then lowered to within about 40 in. of the bath surface and the oxygen turned on. Twenty-two minutes later, they've got about 40 tons of low nitrogen steel of open hearth quality or better.

Bit of History — Dominion got into oxygen steelmaking through a logical chain of circumstances. It started with the addition of the blast furnace in 1951, a move designed to ease the 100 per cent dependence on scrap for steelmaking. With plenty of hot metal and not enough ingot production, Dominion considered the addition of a Thomas converter and subsequent duplexing of steel.

About then came word of successful oxygen operations in two Austrian plants, one at Linz and the other at Donawitz. After quite a bit of pilot model experience, Dominion became convinced that this was the answer. It is even more convinced now.

Geographic Problem — The new steelmaking facilities have helped Dominion solve another problem. Started in 1912 as a small steel foundry, its growth resulted in some geographically nonintegrated operations. When the blast furnace was blown in at the harbor property, hot metal cars had to be hauled more than a mile (across city streets, too).

Once the converter is charged, it swings back under its fume hood, the oxygen lance is lowered and the 20 minute blow commences



Melters slag off from behind this shield. Then steel is poured into the teeming ladle. Bottoms of the pits are below river level, but water seepage is nil

means that oxygen charges are little more than 50 cents per ton of tapped steel.

"There's one thing about this system that you'll find nowhere else in the steel industry," points out Paul Lindberg, melt shop superintendent, "and that's the complete predictability of the process." Once the oxygen requirement is calculated, there aren't any variables (air temperature, moisture content or checker efficiencies).

Refractory Life—Biggest refractory wear occurs at about the bath surface line. McLouth engineers are studying the relationship between oxygen nozzle size and brick wear. Originally, they were using a 1¾-in. opening, but since shifting to a 1⅝-in. tip, side-wall erosion has been reduced. Apparently, the biggest tip causes a more violent boil, thus a more critical refractory attack.

But changing linings isn't much of a chore. Vessels come in three sections, a top, side wall and bottom; by keeping a couple of spare tops and bottoms with tank linings already in place, McLouth can completely reline a vessel in 38 hours. First, the top is removed and replaced; the vessel is rotated 180 degrees and the bottom is replaced; then bricklayers move in to build the new magnesite lining over the tank lining.

Versatility — When the whole plant was designed, there was some uncertainty as to how much ingot tonnage could be made directly in the oxygen converters. So McLouth designers planned their shop for prerefining in the vessels and finishing in their 200-ton electrics in the next bay. Hot metal transfer lines were installed to each of the furnaces, the tracks extending right into the oxygen melt shop.

The first several weeks of operation last December proved to McLouth that this system would work. By charging blown metal into the electrics, they were able to finish the steel at only 350 kw per ton. This feature will give McLouth an advantage if scrap prices ever skyrocket.

Now with the oxygen converter near the blast furnace and with the four open hearths in temporary retirement, that hot-metal haul is eliminated. Dominion bottom-pours all its ingots. When these 4-ton beauties are stripped out of the molds, they are just over a mile away from the soaking pits. Special trailer trucks are refractory-lined to save as much ingot heat as possible. Each carries 20 tons of ingots. Soaking pit fuel consumption is considerably reduced.

Other Facilities—Of the 500,000-ton ingot and casting capacity, the biggest weight goes into cold-reduced products. Dominion, by the way, was the first completely integrated tin plate producer in Canada when it started cold rolling in 1935. Other products include plate, hot-rolled sheets, cold-rolled products, galvanized sheets, enameling iron, steel castings and pig iron.

Dominion bottom pours all its ingots on these special cars, and then moves them into the stripping area

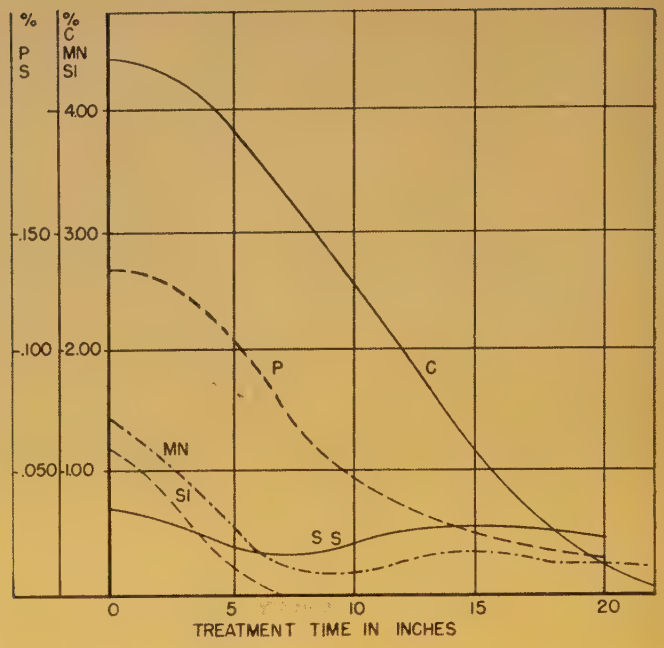
Mill facilities are built around the 84-in. universal plate mill (it doubles as a slabber for the strip mill) and a new 4-high, 60-in., reversing hot strip mill. They feed the 34, 36 and 42-in. reversing cold mills. Five tinning pots, an electrolytic tinning line and a hot-dip galvanizing line finish most of the cold mill tonnage.

Before the year is out, Dominion will complete its $50-million expansion program.

To bring steel finishing facilities into better balance with ingot tonnage, a 56-in., cold reversing mill and a new Armzen electrolytic galvanizing line are to be added.

What Happens in the Oxygen Vessel

Temperature beneath the oxygen jet approaches 6000°F and the violent bath agitation is much like the carbon boil in the open hearth. Here's Dominion's practice



Curves show what happens to various elements during blowing

THE 99.5 per cent pure oxygen at 150 psi produces iron oxide in the area of contact with the bath. All the lime charge is added before the blowing cycle reaches the one-third point. The iron oxide immediately fluxes the lime, and it is this early formation of the slag which accomplishes most of the sulphur and phosphorus removal.

In the reaction of the iron oxide with the rest of the bath, carbon monoxide is formed, probably in this manner:

$$Fe_2 + FeO = 4Fe + CO$$

The CO, unable to escape in the area of the oxygen-bath contact, apparently is forced to the bath circumference. This would explain the violent stirring action which brings a continuous change of metal in the reaction center until the end of the carbon removal. High-speed photographs taken during a blow reveal that there is also considerable splashing of metal above the slag, which makes for good intermixing throughout the cycle.

20 Minutes Later—The end point of the treatment is clearly defined by the flame drop at the vessel mouth. At this point, the lance is withdrawn. The vessel is tilted to the horizontal position, so that the fluid slag can be raked off. Enough limestone or crushed slag is then shoveled into the fore part of the bath to chill the slag.

The vessel is tilted, and while the chilled slag is held back, steel is cleanly tapped into the ladle. Any ladle additions are made at this time in the usual manner.

Little Manganese Addition—In rimming steels, about two-thirds the amount of ladle deoxidizer is required for oxygen steel, compared with open hearth or electric steel. Since the residual manganese is much higher than that obtained in open hearth practice, the manganese ladle addition is much less, which is a cost saver.

In fact, with the low and easily held residual sulphur analyses (average 0.020 per cent), it is not improbable that the manganese could be cut to the point where little or no addition would have to be made. Some testwork along those lines has shown considerable promise. Dominion engineers believe that, if it were desirable, a lower manganese residual could be achieved with a two-slag practice.

Sulphur Easy—In no other steelmaking process is control of sulphur as easy as in the oxygen process. Using a hot metal containing 0.040 per cent sulphur, no difficulty is experienced in maintaining a maximum residual of 0.025 per cent. Increasing the lime charge by 2 or 3 per cent can insure sulphur as low as 0.015.

Tramp element residuals have proved appreciably lower, too. In the making of high-quality, deep-drawing grades of steel where low residual alloy contents are specified, the oxygen process has a distinct advantage. By using iron oxide as the cooling medium in place of scrap, residual alloys can be virtually eliminated.

Lining Life—Consumption of refractory material in the vessels is averaging around 20 lb per ton of steel produced. While this is higher than in the Thomas process, it still falls far short of the open hearth requirements. Linings have been averaging about 250 heats before replacement. Most of the wear occurs just above the slag-metal line, and little on the bottom.

Lining materials and methods are much the same as those used in the Thomas converter. Dominion is using a burned dolomite bonded with tar. The keystone-shaped bricks are 16 in. long and are pressed in a machine in a corner of the meltshop. While one vessel is operating, the other is relined.

OXYGEN CONVERTERS

AND

AUXILIARIES

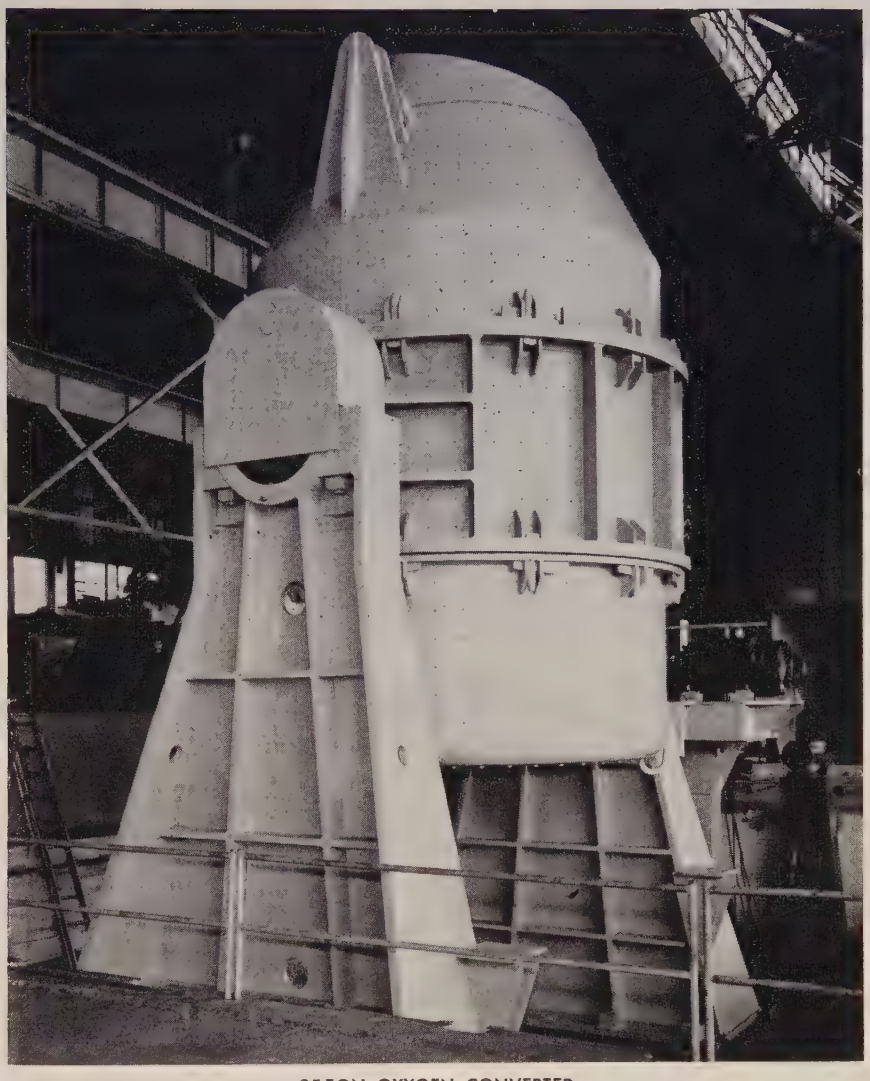
Hot Metal Mixers
Hot Metal Mixer Cars
Ladles
Ladle Stands
Ladle Transfer Cars
Scrap Cars
Slag Cars
Dragouts
Slag Pots
Jib Cranes
Jack Cars
Post Cranes
Ingot Cars

Gas Cleaning Systems

Stationary and Movable Hoods

Gas Cooling Chambers

Primary and Final Cleaning Apparatus



35-TON OXYGEN CONVERTER
FOR McLOUTH STEEL CORPORATION
COMPLETELY FABRICATED AND ASSEMBLED
IN PENNSYLVANIA ENGINEERING CORPORATION SHOP

The Oxygen Converter Process for making high-quality, low-carbon steels made its debut in the United States. Pennsylvania Engineering Corporation is justly proud to have been called upon to build the first Oxygen Converters ever made in America.

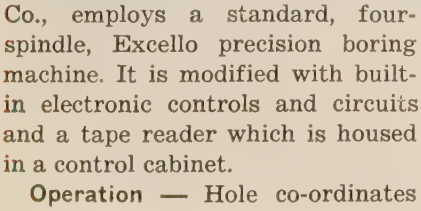
PENNSYLVANIA ENGINEERING CORP.

NEW CASTLE, PENNA.

DESIGNERS, FABRICATORS AND ERECTORS OF STEEL MILL EQUIPMENT

Over-all view of tape-controlled boring machine. Electronic control circuits, tape reader and manual controls are housed in cabinet at left. In foreground, an operator punches hole co-ordinates and feed instructions on the tape with a perforating machine

Punched Tape Directs Precision Boring



Rotary holding fixture mounted on cross slide of boring machine

PUNCHED TAPE systems for operating machine tools continue to find new uses. Tape has been applied successfully to a precision boring machine for production of instrument gear trains.

This application, developed by Minneapolis-Honeywell Regulator Co., employs a standard, four-spindle, Excello precision boring machine. It is modified with built-in electronic controls and circuits and a tape reader which is housed in a control cabinet.

Operation — Hole co-ordinates and feed instructions are punched on plastic tape by a perforating machine similar to a typewriter. Electronic signals from the tape regulate the linear travel of the boring machine's hydraulic cross slide and the rotary motion of a holding fixture mounted on the cross slide.

Tape-controlled boring is suited for medium-sized production lots. Tooling and setup costs are substantially lower than those for punch press piercing dies or drill ream jigs, and operating costs are less than those for jig borers, say Minneapolis-Honeywell officials.

Tape preparation requires about 5 minutes per hole. Complete changeover from one part to another can be done in 30 minutes.

Setup—To start a job, the operator attaches an adapter ring to the rotary fixture, mounts cutting tools in the four spindles and places the punched tape in the reader of the control circuit. After inserting a blank piece in the fixture, he presses a button to initiate the automatic cycle. After the machine has read the complete strip of tape, it automatically stops to permit removal of the finished part.

Although designed for boring shaft holes in gear plates in which center-to-center hole tolerances must be tight to prevent binding or backlash, the machine is also adaptable to a variety of hole patterns and sizes.

Versatile—Different parts can be handled by changing the adapter ring and inserting the appropriate tape. Where a small number of special plates are needed, the machine can be manually operated by adjusting ten knobs to control the linear travel of the cross slide and the rotary motion of the holding fixture. Manual control knobs are in the control cabinet.

In either manual or tape-controlled operation, co-ordinate information is fed to the machine in increments of 0.0001 in. over the 8-in. linear range and 0.01 degree over the 360-degree rotary range. Accuracy is better than plus or minus 0.0005 in.

FOR 75 YEARS

Manufacturers of modern machine tools

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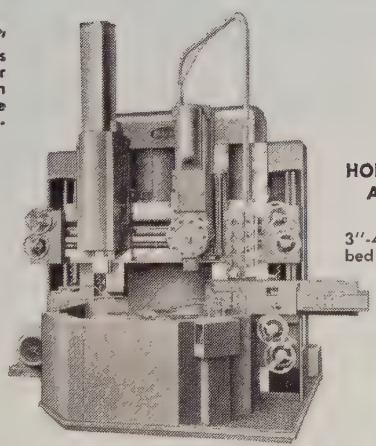
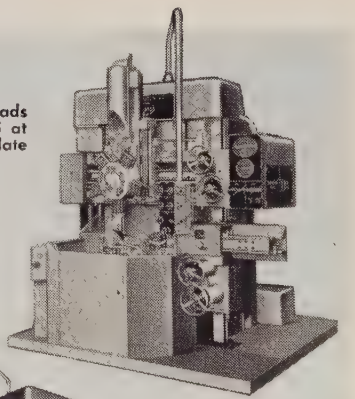
For three-quarters of a century it has been our privilege to serve industry — at home and abroad — with modern machine tools. Today, as in 1880, the name "Bullard" stands for advance design in engineering, quality of craftsmanship and reliable performance.

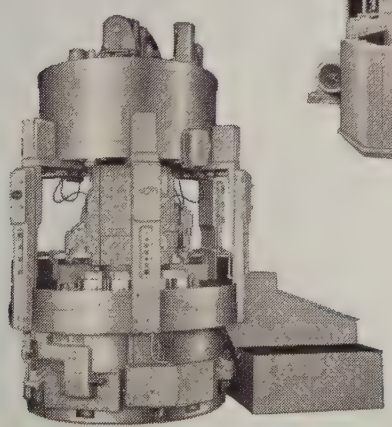
CUT MASTER V.T.L. Model 75
In six sizes, 26"-36"-46"-56"-66" and 76". The 26" and 36" sizes have two heads — side and either a swiveling turret or swiveling ram on rail. 46"-56"-66" and 76" have three heads in various combinations.



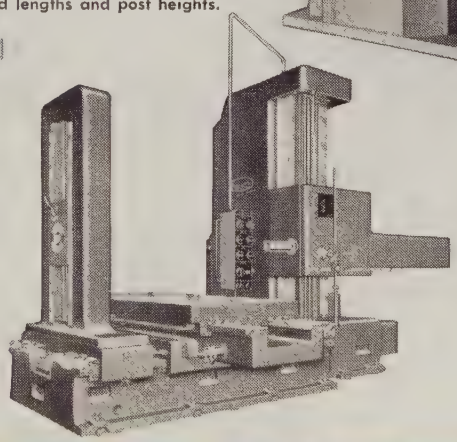
MAN-AU-TROL Model 75
May be applied to any or all heads of Cut Master V.T.L. Model 75 at time of ordering or at a later date for fully automatic operation.



MULT-AU-MATIC
Type "L" — 10" with 6, 8, 12, or 16 spindles, 14" and 18" with 6 or 8 spindles.

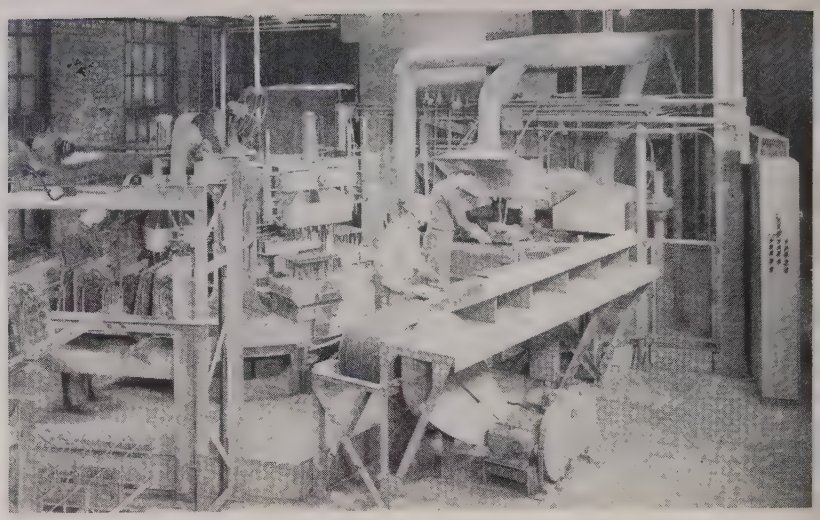


HORIZONTAL BORING, MILLING AND DRILLING MACHINES, Model 75
3"-4" and 5" spindle with various bed lengths and post heights.



THE BULLARD COMPANY • BRIDGEPORT 2, CONN.

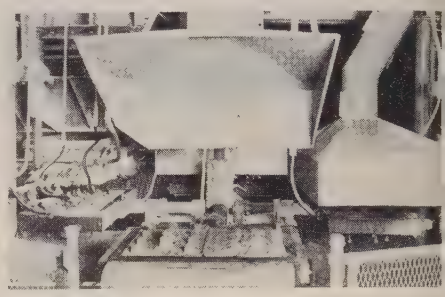
Integrated Shell Molding Process Yields Quality Castings



Heart of the shell molding system. Four-station molding machine and pushbutton control station are at right. Core setting conveyor and closing machine are at center. Mechanized shell storage conveyor is at left

Investment station of molding machine. Water-jacketed flask above pattern confines sand and resin. Rollover motion of flask removes excess mix

Flask is withdrawn, and pattern with its soft plastic shell moves to two successive curing stations. Infrared heaters give the desired hardness



At the ejector station, operator removes thin shell. The shell shown here consists of a cope half and a drag half easily parted

MALLEABLE IRON castings are produced at Link-Belt Co.'s Ewart plant in Indianapolis with a new shell molding system that contains all process equipment from sand preparation to the handling of finished castings.

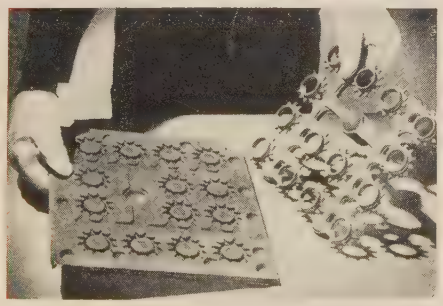
The system can be laid out compactly and fitted into limited space. Three men operating the shell-molding machine, core setting conveyor and shell-closing machine produce more than 180 molds an hour.

How It Works—Shells are prepared on a four-station molding machine by dropping a mix of thermosetting resin and sand over a heated metal pattern. The thin shell is cured and then removed from the pattern.

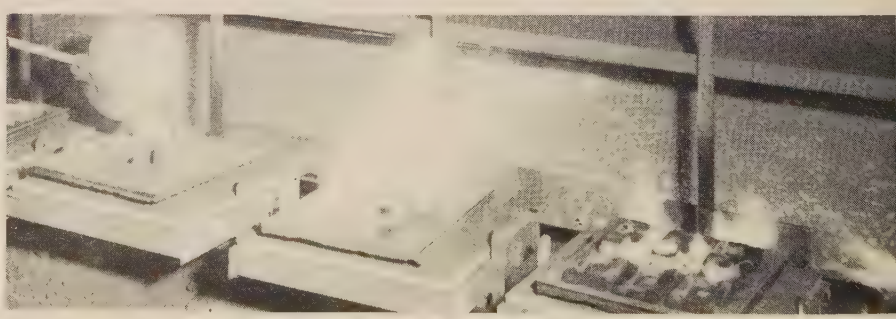
Cores are set and the shell is closed. Molds then go to storage or to a conveyor for pouring.

All operations are pushbutton controlled. Thickness of the shell mold can be varied by changing the temperature of the pattern and the retention time at the investment station. Link-Belt Co., Chicago, manufactures all components of the system.

Cores are set and drag half is placed on closing machine. Resin is applied and cope half put in place. The air-operated mechanism of the closing machine holds the two halves together while resin sets

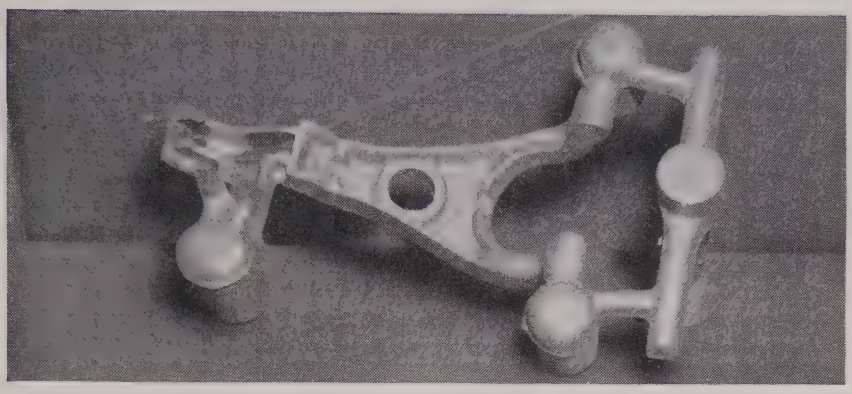


Finished casting with mold



Shells are loaded on conveyor which takes them to pouring area

Shrink steals strength — and profits



— RADIOGRAPHY points the way to avoid it

THIS steel fork lever was designed to take a specific load. Would it hold up? Not if shrinkage had robbed its strength.

But here is where radiography came in with double-barreled effect. First the radiographs which were made showed the foundryman that internal shrinkage was present. Then the radiographs disclosed a recurring pattern of these defects, thus suggesting a change in molding which greatly reduced the difficulty.

This is typical of the ways radiography helps the foundryman make sure only satisfactory work is delivered and so builds a reputation for high-quality castings.

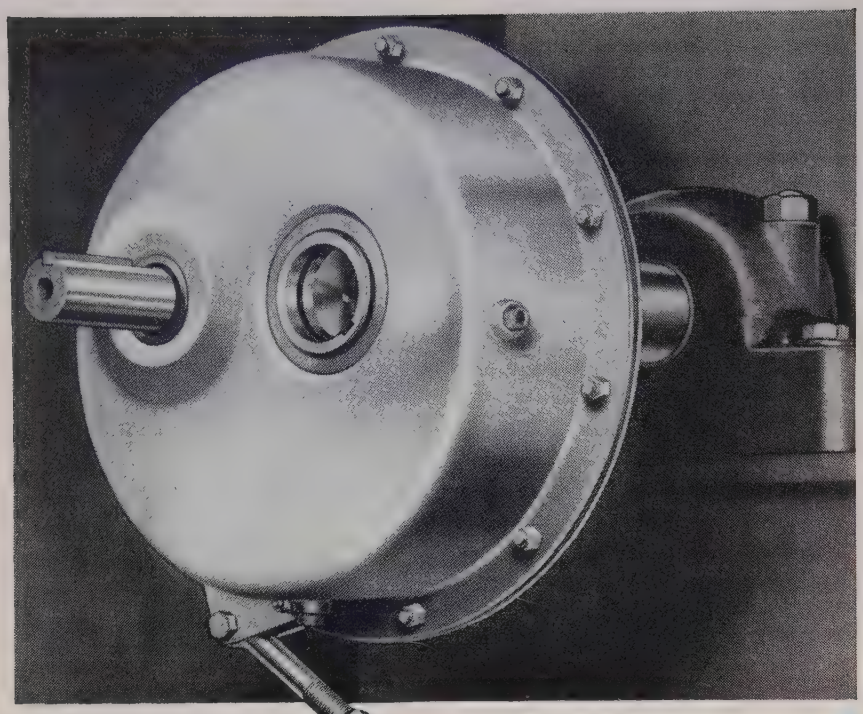
If you'd like to know how it can improve your own operations, talk it over with your x-ray dealer. Or, if you like, write us for a free copy of "Radiography as a Foundry Tool."

EASTMAN KODAK COMPANY, X-RAY DIVISION, ROCHESTER 4, N. Y.

Radiography

— another important example of Photography at Work

Kodak
TRADE-MARK



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- Single or double reduction
- Wide output speed range—420 to 10 rpm

FALK

ALL-STEEL

Shaft Mounted Drives—

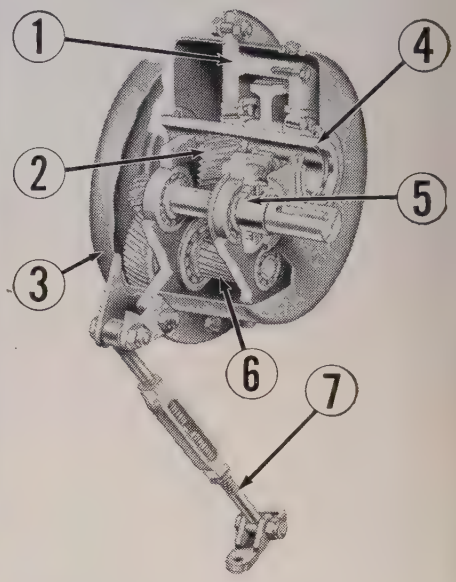
simple-compact-rugged-efficient

Created specifically for the vast number of applications demanding a sturdy and compact speed-reducing unit for direct mounting on the driven shaft, the new Falk all-steel Shaft Mounted Drive is built to give long service life at substantial savings of space, time, power and maintenance costs!

This efficient helical-gear drive, latest in the unmatched list of Falk precision-gearing achievements is an ingenious modification of the time-tested Falk Motoreducer design which has held, for more than 20 years, recognized leadership in this branch of highest-quality power transmission . . . It complements and completes the world-famous Falk line of reduction units covering the entire range of industrial applications.

Investigate the Falk all-steel Shaft Mounted Drive. Write to Department 247 for engineering bulletin, including selection and dimension details.

These famous FALK "In-built" factors *mean long life and dependability...*



1 **All-steel Frame,** with more than double the rigidity of iron, supports all rotating elements.

2 **Precision Helical Gears,** designed and machined by Falk, rated to AGMA standards.

3 **Pressed Steel Housings,** whose sole function is to keep oil in, dirt out; easily removed for gear inspection without dismounting unit.

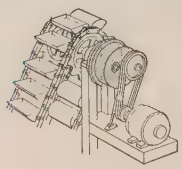
4 **Through Hollow Shaft** with counter bore provides for easiest installation or removal from driven machine shaft extensions.

5 **Backstop** can be furnished with the unit or added later for positive prevention of reverse rotation.

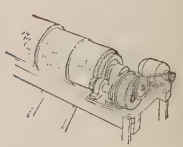
6 **Positive Lubrication,** continuous direct dip of revolving elements at all speeds.

7 **Tie Rod** and turnbuckle serve as anchor and facilitate V-belt or chain adjustment.

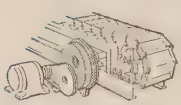
A FEW TYPICAL APPLICATIONS



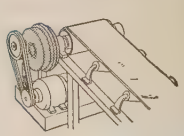
BUCKET ELEVATOR



SAND CLASSIFIER



APRON FEEDER



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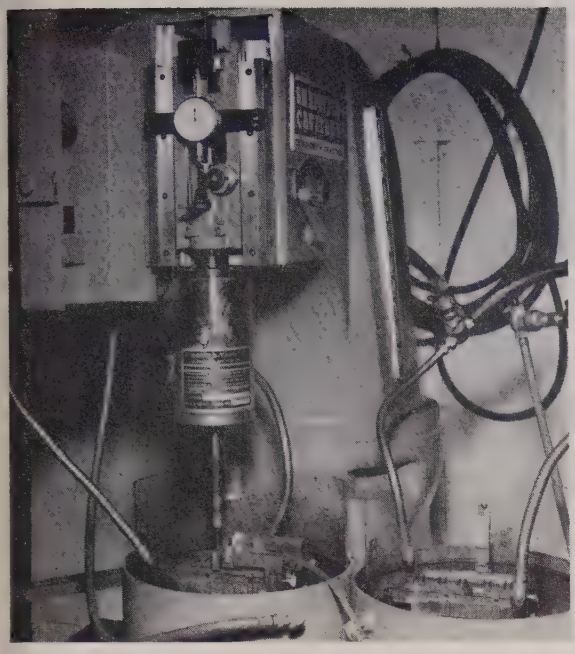
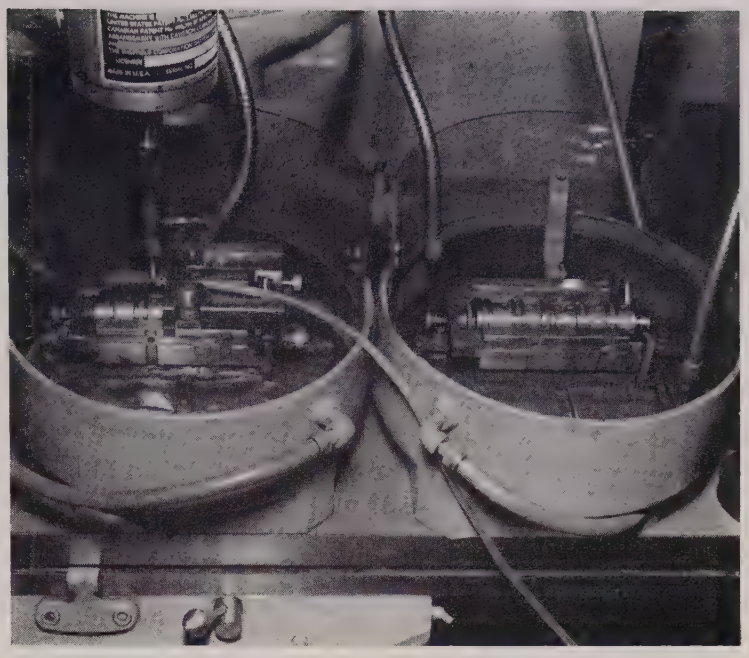


Cavitron showing transducer with bit mounted on tool holder Metal hose—left carries slurry

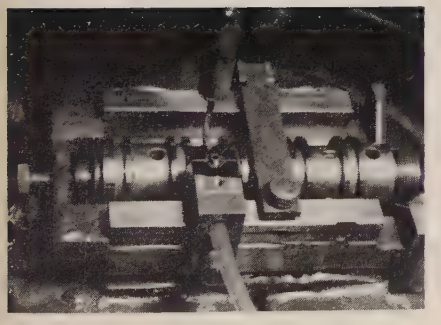


The two work chucks, with roughing jig on left and finishing jig on right. The plunjet locater is in place in the left chuck

Sound Digs Holes

The tiny bit of an ultrasonic machine cuts a hole through a steel sleeve for the control system of jet aircraft by bombarding it with boron carbide grit and air bubbles

By WILLIAM W. WOOD
Tool Research Engineer
Chance Vought Aircraft Inc.
Dallas



Close-up of sleeve being cut by ultrasonic energy. The lateral plunjet lock-up is mounted on center of jig

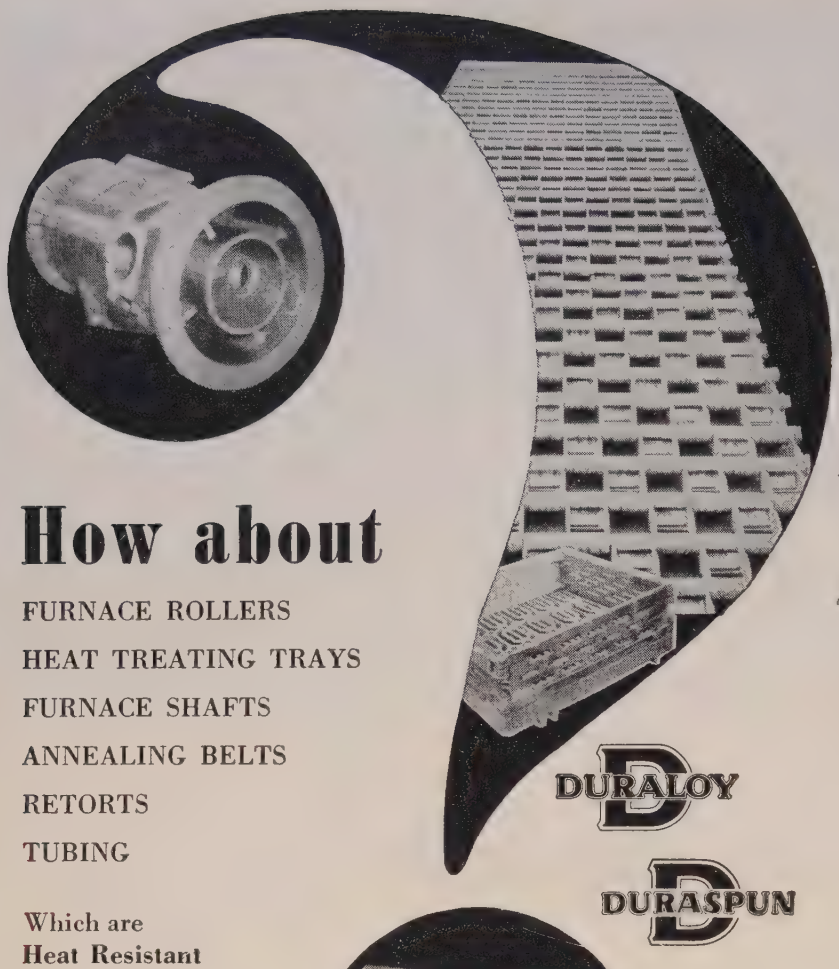
HIGH-SPEED jet aircraft are so responsive to controls that precise amounts of hydraulic fluid are required to move them. Rectangular holes in a sleeve feed the fluid into the control system at exact rates.

Machining these holes becomes a problem. The job calls for a slot 0.050 in. wide and 0.125 in. long for one type sleeve and 0.030 x 0.125 in. for another. Extreme tolerances must be held on both dimension and location of the slots. There can be no burrs or breakouts on the inside diameter, the most important part of the orifice in terms of oil flow.

How It's Done—Tool research engineers at Chance Vought Aircraft use ultrasonic machining to do this job. The ultrasonic machine, called a Cavitron, uses a high-frequency alternating electric current which causes a bit to oscillate 30,000 times a second. The bit is immersed in an abrasive slurry of boron carbide grit suspended in water. High-speed movements of the bit strike the grit and drive it against the surface of the sleeve, giving it acceleration as high as 150,000 times gravity.

The boron carbide bombards the surface, creating a series of cavities and high points. Ultrasonic waves created by the tool's tip travel through the water to produce compressions and vacuums, the latter forming small bubbles of vapor. This is called cavitation. When the bubbles collapse tremendous pressures are created which break off the high points of the metal.

Tooling — Because this action wears away the tool faster than the hole, a rough cut has to be made first. Then a new bit is brazed to the vibrator unit for the finishing operation. At no time dur-



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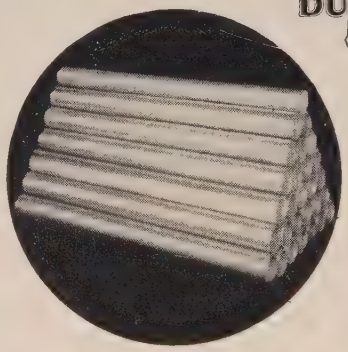

When ready to order, how about checking with us here at DURALOY? For more than thirty years we have specialized in high-alloy castings. In fact, we were among the first to produce static castings and the first to produce centrifugal castings. We are old hands at producing castings alloyed to fit each specific requirement and to finish them to any extent desired.

Melt, castings and finishing are carefully controlled and quality tested by our staff of metallurgists, chemists, X-ray and gamma-ray technicians. If you would like more preliminary information, send for Bulletin No. 3150-G.

THE DURALOY COMPANY
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CHICAGO OFFICE: 332 South Michigan Avenue

ing the cutting process does the bit touch the metal sleeve; all work is done by the boron grit and air bubbles.

The machine has two work chucks and abrasive-coolant collectors. A heavy, 280-grit abrasive is used for the rough cut, 800 grit for the finished slot. The slurry mix (about 60 per cent grit, 40 per cent water) is re-used.

Slurry—It has five functions. It supplies water to effect cavitation, water for cooling the material and water to wash out small steel particles being removed from the work. It supplies grit to rough up the surface, so cavitation can be accelerated, and grit to give a fine surface finish on the side of the tool as it cuts through the slot.

Brass jigs, which resist the erosive action of the slurry, locate the sleeves axially, rotationally and symmetrically around the centerline. Clamps secure the sleeve in the jig.

Positioning — Sheffield plunjet air gages are used with a Sheffield column-type Precisionaire gage to locate the tool bit relative to the sleeve before machining. The plunjets are fitted into holders which are bolted to the end plate and the edge of the V-block in the jig to insure proper alignment.

The tool bit must be attached securely to the tool holder. This is done by brazing the bit to the holder in a jig. It is also essential that the axis of the bit be parallel with the ways of the vertical head. This is done by movement of the plunjet across the bit laterally and longitudinally. Any slight misalignment is corrected by a push with the finger or a slight tap with a hammer.

Inspection—With a 50-power microscope, inspectors check diameter of the sleeve by viewing through an orifice on one side of the sleeve to the inner edge of another which is diametrically opposite. All orifice qualities are held to well within tolerance.

Ultrasonic machining has other applications. Special dies of intricate shape may be machined. Because hardness of the material is not important, dies or parts may be machined after heat treatment to avoid the problem of distortion. In fact, harder materials often are cut more rapidly than softer ones.

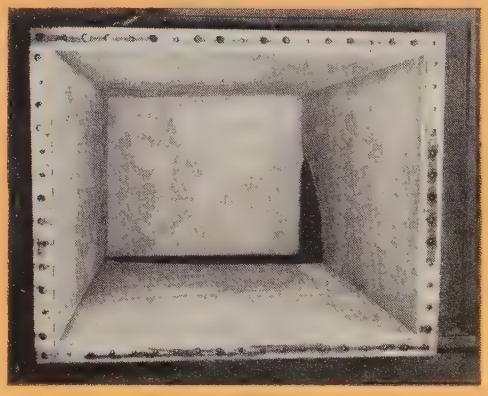
INDUSTRY REPORTS:

cost-reducing uses for

Refractory Castable Insulation

Roof and wall panels are made of B&W Insulating Concrete Mix in this stress relieving furnace.

Covers, measuring six and eight feet in diameter, for these 10 draw and hardening furnaces are also lined with B&W Insulating Concrete Mix.



Shown above is a section of a gas turbine exhaust stack lining completely cast with B&W Insulating Concrete Mix.

Here are a few examples of how furnace operators are cutting installation and fuel costs with versatile insulating concretes.

In intricate furnace linings, for instance, B&W Insulating Concrete Mixes do away with time-consuming hand fitting and the many necessary special shapes. These refractory concretes, which can be exposed to flame up to 2200F, have approximately twice the insulating value of regular refractory castables, and are as easy to use.

Other uses include: Holding furnace roof panels, Portable furnace extensions, Annealing furnace bung covers, Patching insulating firebrick linings, Lining ducts and flues, Protection for furnace foundations, Hardening furnace cover linings, Car bottom linings, Cooling pit walls and roofs, Dust collector linings, Door linings, Protection for furnace steelwork.

Briefly, B&W Insulating Concrete Mixes can be put to profitable use wherever the combination of a castable's fast, low cost installation plus insulation is needed. Though somewhat less efficient thermally than B&W Insulating Firebrick, B&W Insulating Concrete Mixes are far superior to regular castables in insulating value. In fact, 7 inches of B&W Insulating Concrete Mix are equivalent, in insulating value. to 24 inches of regular refractory concrete or firebrick.

Get all the facts from your local B&W Refractories Engineer—or write for Bulletin R-22, which gives complete details on B&W's entire line of refractory castables.

B&W REFRACTORIES PRODUCTS: B&W Allmul Firebrick • B&W 80 Firebrick
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R-22

Silent Hoist gave you ***KRANE KAR,*** the first modern Mobile Crane . . . Front-Wheel Drive . . . Stability without Stabilizers . . . Lifetime Front Axle . . . Automatic Safety Controls. And now ***Silent Hoist*** gives you **FLUID DRIVE!**

- **Increases engine clutch life.**
- **Provides cushioned starting and acceleration.**
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- **Speeds operation.**
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Ask for Bulletin No. 79C

"Silent Hoist" *KRANE KAR* Swing-Boom Mobile Crane . . . 1½, 2½, 5, 10, 12½ Ton Capacities

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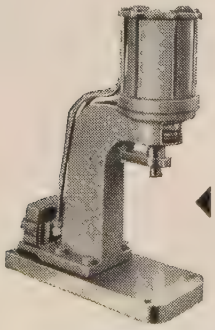
WITH A HANNIFIN AIR PRESS

It's the ideal press for that occasional pressing job. These presses operate off ordinary shop air supply. They're fast and safe. Over 30 models to choose from...many for either bench or floor mounting. Capacities from ½ to 18 tons. Daylight to 46 inches...reach to 12 inches. Prompt delivery.



WRITE. Complete information and prices on Hannifin Air Presses will be sent on request.

6 Tons (Model B-2) One of more than 30 models. Press with base, $554.

1-ton Hand-D-Press. For small parts manufacturers. Press, $232.

Prices F.O.B. our press plant, St. Marys, Ohio, subject to change without notice.

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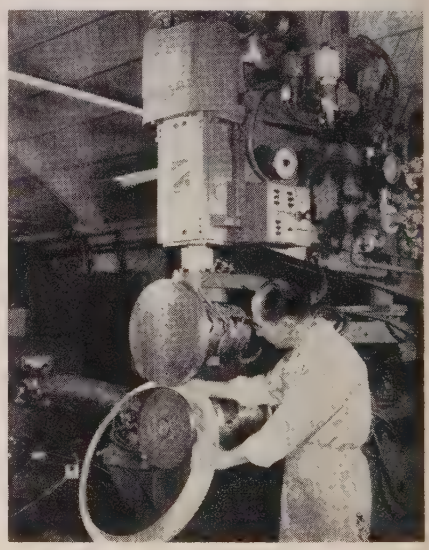
HANNIFIN CORPORATION, 523 S. WOLF ROAD, DES PLAINES, ILLINOIS

Resistance Welding Lab

GROWTH of the resistance welding technique is uncovering new problems practically every day. That's why Sciaky Bros. Inc. decided the time was right for a laboratory which could take on any of these puzzlers and work them to a solution.

Believed to be the only one of its kind specializing entirely in resistance welding and related problems, Sciaky's 15,000-sq-ft lab was opened recently in Los Angeles. While the aircraft and electronics industries will supply much of the work load, the lab is available to all industries.

Special Power—Because of its peculiarly high demands on electrical power supplies, a 3000-kva transformer bank was designed for the installation. Housed under one roof is a complete line of welding machines, including what are said to be the world's largest spot welder and seam welder.



LOOKING FOR THE ANSWERS
. . . it takes big equipment

The latter can exert pressures up to 10,200 lb. Power at the secondary leads peaks at 150,000 amp. This machine can weld aluminum in thicknesses to ¼-in., steel up to ½-in. Spot welder pressure goes up to 38,000 lb, with 300,000 amp at the secondary.

Aside from the machines themselves, the lab contains complete facilities for running physical and metallurgical tests. Auxiliary to the lab are a complete machine shop, stocks of materials and metal preparation equipment.

TUTHILL PUMP COMPANY EXPERIENCES...

"NO FAILURES

SINCE USING

SAVES MONEY, TOO!"

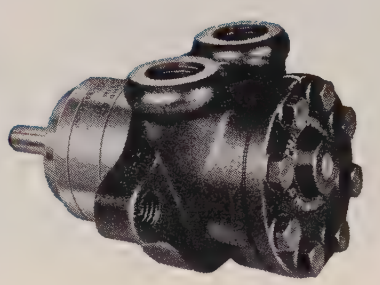
Tuthill knows the rotor is the heart of their pump. Quality cannot be compromised. For more than 10 years, Tuthill has used STRESSPROOF for rotors (replacing heat-treated alloy steel) without a failure!

Strength is required in these rotors to transmit the power through the shaft to the idler gear. Extremely high operating speeds mean the rotors must be straight. Wearability is an absolute necessity if the rotors are to stand up under severe operating conditions.

STRESSPROOF has all of these qualities. In addition, it is readily machinable. Its in-the-bar strength eliminates heat treating with its distortion, cleaning and subsequent machining problems. No rough machining, heat treating and finish machining with STRESSPROOF. The rotors are finish-machined from the bar.

STRESSPROOF's minimum warpage eliminates all straightening operations in this case. Its wearability keeps the rotor running year after year. It also provides real savings in both material and manufacturing costs.

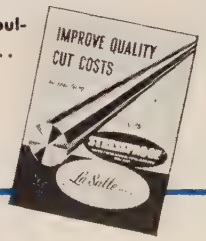
STRESSPROOF makes a better part at a lower cost.



Tuthill Model L Series mechanically sealed pumps are used in lubricating, hydraulic, transfer and burning oil service. Capacities range from ⅓ to 6 g.p.m. at pressures up to 600 p.s.i. The rotors for these dependable industrial pumps are made from La Salle STRESSPROOF.

WRITE TODAY FOR

helpful data bulletin No. 15... "Improve Quality — Cut Costs"



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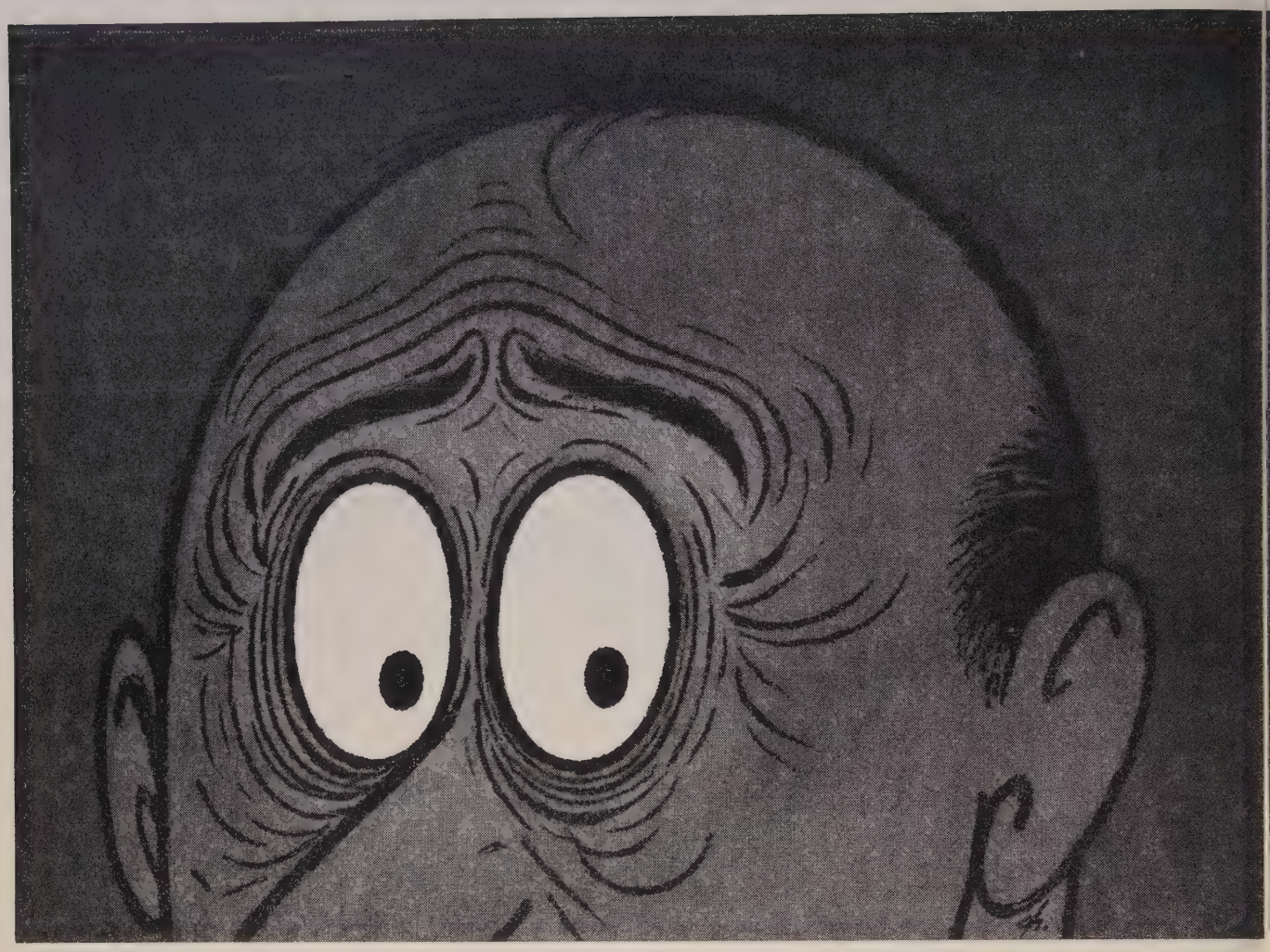

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Your Kaiser Aluminum Distributor has had plenty of experience serving firms like yours. He stocks a wide variety of aluminum and can provide you with almost any size, shape or alloy—slit, sawed or sheared to your needs.

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All these services mean more profits for you because they help lower your costs. Why not call your Kaiser Aluminum Distributor today?

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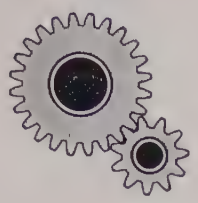


MACHINE TOPICS

By R. F. HUBER, *Machine Tool Editor*

TO THE PERENNIAL, and probably eternal, question (will the special-purpose machine replace the standard?), D. E. Hawkinson, Greenlee Bros. & Co., Rockford, Ill., implied that the answer is "No" in his speech before the annual meeting of the American Society of Tool Engineers in Los Angeles.

When it comes to picking the machine for a job, Mr. Hawkinson pointed out: "Special vs. standard is the wrong approach . . . different types of machines are necessary and . . . on many production jobs, standard or combinations of standard machines are the most practical approach."

Not So Easy—Mr. Hawkinson, vice president of engineering and machine tool sales at Greenlee, told his audience that, in fact, machine tools don't break down into two simple groups, explaining: ". . . there are actually four, not two, existing groups of machine tools, with the dividing lines between them almost impossible to locate or define sharply."

The four groups, as he sees them are: 1. Basic single-operation machines (engine lathes, drills, planers, milling machines, etc.). 2. Basic general-purpose machines (turret lathes, screw machines, high-speed broaches, etc.). Of this group, Mr. Hawkinson notes that almost invariably, as a machine becomes more productive, it becomes less flexible. 3. Machines of the first two groups, altered with special additions or tooling to adapt them to high production, difficult operations or a combination of operations. 4. Machines designed for a variety of operations on specific workpieces (transfer machines, indexing machines).

He calls the machines included in the third group "hybrids," adding: "Engineers take available standard machines, as a base and, with ingenious tooling, make them suitable for high production or difficult operations."

Choosing—Which machine or combination of machines to use will be dictated by the economics of available systems. Production requirements, length of the production run and the nature of the workpiece all will influence the decision. In addition, there's another, sometimes critical factor — the length of time available for machine procurement. Special machines inherently require a longer lead time.

Extra Special

To Mr. Hawkinson's third group might be added a subgroup: Basic machines designed from the floor up for automatic handling (or maybe this belongs in group four).

A lathe will soon appear with its working parts on top instead of front mounted to make it more adaptable to automated lines. It will incorporate built-in compensation for wear on the cutting tool, plus automatic gaging, inspection and rejection of out-of-specification work. First installations are likely to be in automobile plants and artillery shell lines.

Out-of-tolerance bearing races are straightened hydraulically, but when it comes to heat treating effects . . .

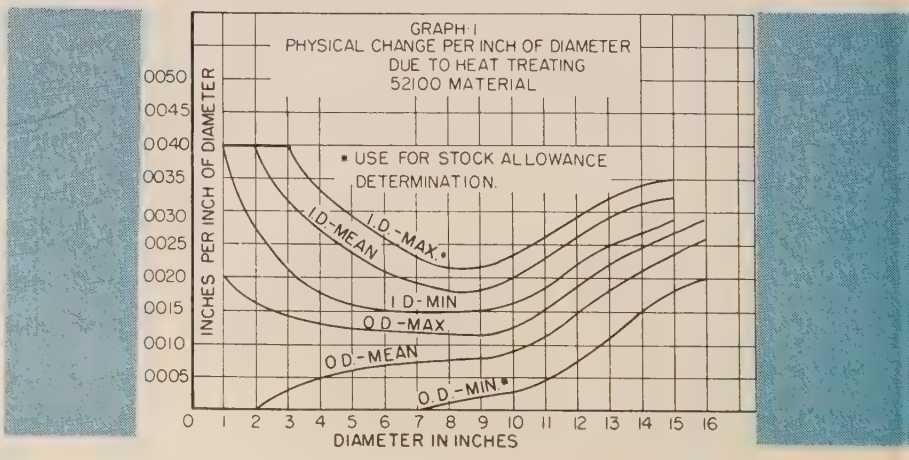
The Change Is Accounted For

Distortion and physical-size changes in heat treating can influence stock allowances for machining. Here's a system for letting experience dictate requirements

By L. L. McARTHUR and E. H. KINNE
Chief Metallurgist *Assistant Supervisor*
Rollway Bearing Co.
Syracuse, N. Y.

YOU CAN minimize finishing costs on many heat treated parts if you can predict the stock allowance necessary to withstand distortion and physical size changes during heat treatment.

At Rollway Bearing Co., for instance, we have listed accurate stock allowances on master charts which apply to any possible combination of diameter, length and section measurements of any bearing. These allowances are assigned to each part before rough machining.



THREE allowances are made for each bearing part. The first one allows for surface coarseness resulting from preliminary rough machining. The second is to compensate for growth or physical size change. The last takes distortion effects into account.

The first allowance has become a rule of thumb. It's broken down into three classes, based on the part OD.

up to 4¾ in. OD	OD allowance	0.004-in.
	ID allowance	0.004-in.
from 4¾ to 16 in. OD	OD allowance	0.006-in.
	ID allowance	0.006-in.
from 16 to 30 in. OD	OD allowance	0.008-in.
	ID allowance	0.008-in.

Growth Change—The second allowance is determined by first designating three groups based on the steels used. They are: SAE 8620 for carburizing, SAE 52100 for through hardening and modified alloys for other parts to be through hardened.

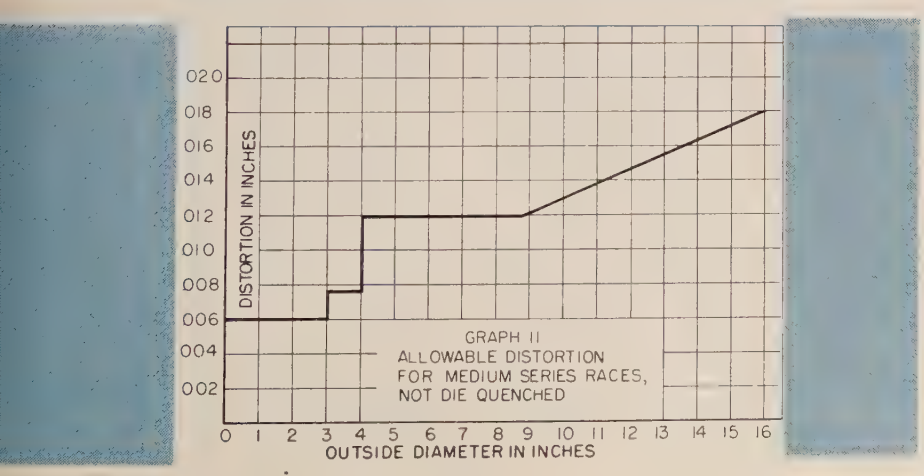
Each of these groups is then divided according to the OD measurement of the race. Within groups, OD and ID allowances are formulated and charted as increments of OD size in one-inch progression. Using data from test runs, the growth factor is listed as averages of maximum, mean and minimum change for each type of steel in terms of size change per inch of race diameter (Graph 1).

Distortion allowances are calculated by measuring distortion effects on OD and ID, length and section (OD minus ID). These factors, gathered from test runs, are plotted on graphs (see sample Graph II). These curves are plotted to consider the actual relationship of bearing race diameters, length and section. They also are used to determine the degree of distortion acceptable without supplementary straightening as well as the amount of straightening required to pass intermediate inspections.

Combination—All three types of allowances are then combined and a total allowance figure is entered on a master allowance chart. From this chart, the stock allowance for any size bearing can be determined and specified at the beginning of the machining operations.

STOCK ALLOWANCE MASTER CHART—MATERIAL—SAE—52100

MAX LENGTH	ONE INCH				ONE & 1/2"				TWO INCHES				TWO & 1/2"			
MAX SECTION	1/8	1/4	3/8	1/2	1/8	1/4	3/8	1/2	1/8	1/4	3/8	1/2	1/8	1/4	3/8	1/2
OUTSIDE DIAM																
1/2" TO 1"																
1" TO 1 1/2"																
1 1/2" TO 2"																



GRAPH II
ALLOWABLE DISTORTION
FOR MEDIUM SERIES RACES,
NOT DIE QUENCHED

Built for hundreds of applications, the bearings necessarily differ in size, weight and design. Rigid specifications must be met for each type. Some are case hardened while others are through hardened. Some heat treated sections require finish grinding, but other areas, which will not be finish ground, must conform to specified dimensional tolerances even after they have been heated and quenched.

History—Allowances are determined from a series of test runs. During each of the runs, we take and record measurements of all the bearing dimensions. As a result we are able to interpret heat treating effects in terms of bearing OD, length and section.

Averaged from hundreds of measurements, the allowances entered on the master charts are used to calculate exact machining, heat treat and grinding tolerances.

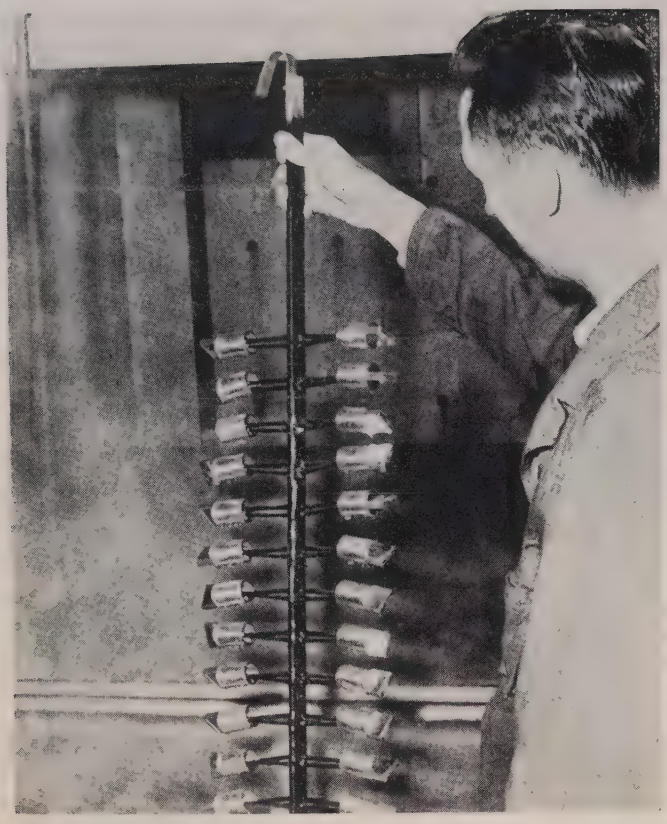
A typical test used about 50 bearing races which were numbered, measured and then heat treated. After quenching and tempering, the parts were again measured. These measurements indicated the maximum, mean and minimum size and distortion changes that could be expected on production runs.

More Control—To be positive the allowances work in production, we also must control the metallurgical structure, maintain a systematic furnace atmosphere and temperature, and provide specific quenching techniques.

Quench oil is maintained at between 125 and 130° F. Stored in a central tank, which feeds the rest of the quench tank system, this warm oil has less viscosity and better heat transfer properties. To augment processing controls, special handling precautions during quenching are necessary.

As a result of this system, our previous experience is available to us in terms of allowance figures on the master chart. Any bearing starting through the sequence of machining, heat treating, straightening, and other operations is assigned a stock allowance according to its size.

Finishing costs are slashed since proper stock is allowed automatically.



For contact tips . . .

Special purpose
TITANIUM-TIPPED ANODIZING RACKS
General purpose

Titanium Tops in Anodizing Racks

AT $10 to $20 a pound, titanium is an economical material for contact tips on anodizing racks. Superior corrosion resistance is the reason.

That's the experience of Omega Inc., Litchfield, Conn. Its president, Joseph Reed Jr., has high praise for the metal's performance in aluminum anodizing solutions, stating:

Savings—"Titanium can contribute savings in two ways. A titanium-tipped rack may be used indefinitely if proper precautions are taken. Equally important, titanium clips are not affected by solutions used in anodizing, so no stripping of the rack is required between each cycle. This saves both time and labor costs.

"True, the titanium rack costs approximately three times as much as the conventional rack, but for any production run which will demand three or more sets of special-purpose aluminum racks, titanium is definitely the choice. After such runs, titanium racks are still in good condition. Since titanium wire is much stronger than aluminum, rack maintenance is reduced to a minimum."

No Change—Omega found no design changes necessary in the manufacture of racks. Forming techniques applicable to stainless steel spring wire, work well with annealed titanium wire. A coating of plastisol protects the spine of the rack and the points where the titanium clips are joined to it.

These anodizing fixtures are one indication that the movement of titanium into civilian use is picking up. Until recently, the only major nondefense use was for nacelles and firewalls in the DC-7 luxury airliners.

Where Else?—A wide variety of potential applications for titanium are based on the metal's excellent resistance to chloride ion attack. Titanium is completely resistant to pitting in sea water and marine atmospheres. In the future, the marine industry may be the major nondefense consumer.

At current price levels, more immediate interest is centered in applications where titanium shows excellent resistance and conventional metals are rapidly attacked. Such applications are:

1. Titanium screens, baffles and mixers for handling chlorine dioxide in the paper-pulp industry. 2. Equipment to handle products used in commercial bleach manufacture, i.e., sodium and calcium hypochlorite. 3. Evaporators for metallic chlorides, especially cupric and ferric chloride.

Air Products
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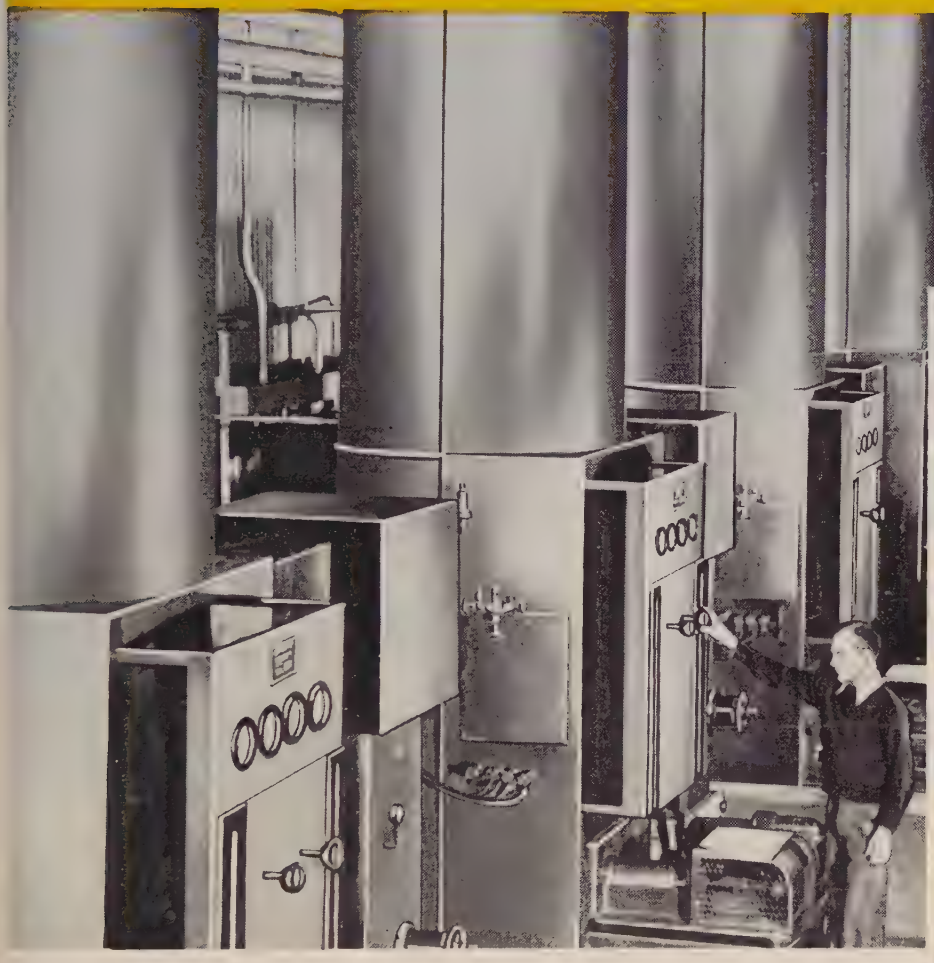
"ON-LOCATION" GENERATORS

provide abundant oxygen at lowest cost



Make your own oxygen (and/or nitrogen) within the premises of your plant, with an Air Products Multiple Generator Lease installation. It assures maximum economy, efficiency and safety in the use of oxygen for modern steelmaking.

No capital investment; no transportation charges, delivery failures, shortages, etc. Abundant low-cost oxygen constantly on hand at the turn of a valve, for varying production or experimental needs

We can furnish equipment for all requirements whether they be:

AIR PRODUCTS TONNAGE GENERATORS for oxygen and nitrogen in unlimited quantities . . . standard or special models . . . high or low pressure cycles.

or

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Generators to produce any quantities at any purities and pressures.

Write, stating your requirements. We will give you actual figures showing savings you can make.

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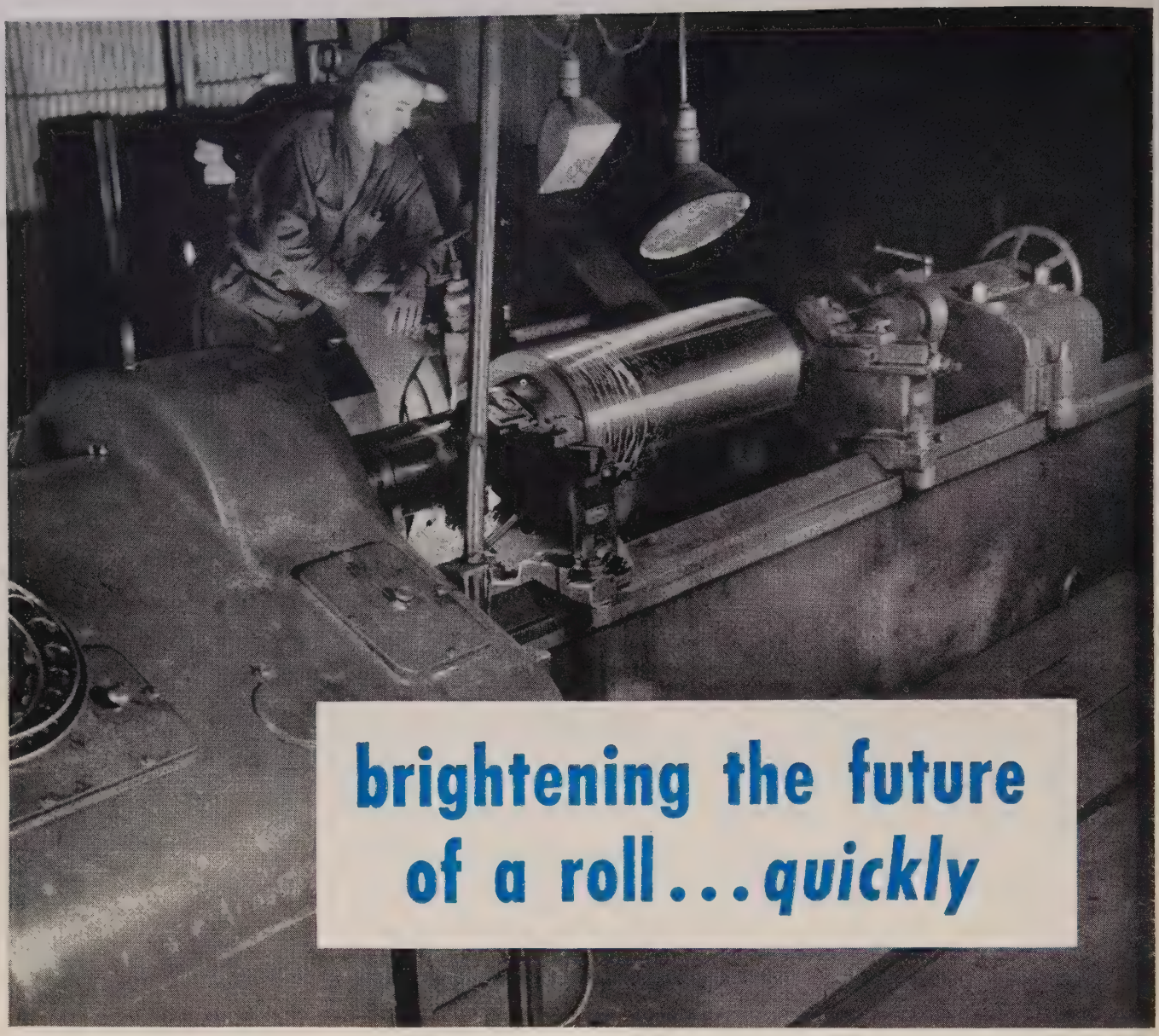


The machine is a Farrel heavy-duty roll grinder. It will take heavy cuts for rough grinding or grind a roll to the highest mirror finish. On either type of work there's no faster way to grind a roll.

Rolls ground on this machine have longer life. The exceptional smoothness and absence of vibration in roll, wheel and traverse drives means less metal has to come off to clean up a roll in roughing and finishing operations.

This grinding accuracy is a vital factor in reducing the frequency of roll replacement, and consequently the cost of new rolls. Furthermore, faster grinding means increased productive capacity of the machine, and adds up to savings in labor cost.

If you would like to cut down on grinding time and cost, and refinish your rolls more accurately, look into Farrel grinders. They are available in two types—type HD shown here, and type TT with traveling work table. Bulletins giving complete specifications of either type are yours for the asking.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.

Sales Offices: Ansonia, Buffalo, New York, Akron, Chicago, Los Angeles, Houston FB-961

Farrel-Birmingham®

LP-gas and gasoline are dispensed from the same service station. Inset shows converter (left) installed close to the LP-gas carburetor on this fork-lift truck where engine room is at a premium

Fuel Switch Cuts Handling Costs

Conversion of 103 handling trucks to LP-gas will pay for itself in two years. From then on, it's gravy. That's what an aircraft builder discovered

A SAVINGS of $9560 a year. That's what officials at Douglas Aircraft Co., Santa Monica, Calif., figure they'll get by converting 103 gasoline-driven, internal-transportation units to propane (LP-gas).

This figure is projected from results of a test conducted by the company from Oct. 10, 1953, to Mar. 13, 1954. Used for the test were four Clark industrial tugs and two Yale fork-lift trucks. Half the units were converted and operated on propane, the remainder on gasoline.

Unit Savings — The company saved $0.061 on fuel and combustion-system maintenance costs per engine hour on the tugs, $0.085 per engine hour on the fork lifts. Additional savings came from longer engine life and less frequent overhauls.

Tests were conducted on units with recently overhauled engines or recently installed new engines. All units were supplied with new sets of spark plugs, fresh oil and new oil filters.

Test Methods—Engine hour meters provided an accurate basis for measuring the amount of engine operation, whether the unit was moving or not. Readings were taken daily.

Laboratory tests were conducted on specimens of crankcase oil for

	Industrial Tugs		Fork-Lift Trucks	
Per Engine Hour	Propane	Gasoline	Propane	Gasoline
Gallons of fuel	0.471	0.485	1.046	0.776
Fuel cost	$0.033	$0.086	$0.073	$0.138
Fuel and combustion system maintenance cost	$0.007	$0.015	$0.010	$0.030
Total cost	$0.040	$0.101	$0.083	$0.168
Saving	$0.061		$0.085	

STAMPINGS

PILOT RUNS

SPECIAL METHODS PRODUCE SMALL QUANTITIES AT MINIMUM COST.

When you need just a few pieces — when you're still in the experimental stage—then an economical, cooperative source of parts is important.

Our **Machine-Cut Method** avoids custom die costs completely by use of special machinery which skillfully fashions pilot quantities.

Careful calculation determines the point at which labor costs warrant our **Short Run Method,** which uses simple contour dies and special purpose presses.

Best of all, when you get into large quantities on the experimental part, our STAMPINGS DIVISION is still your most economical producer, using our **Production Method.** Thus all three methods are at your disposal. And impartial choice of method *saves money* for you!

STAMPINGS DIVISION

LAMINATED SHIM COMPANY, INC.

3405 Union Street, Glenbrook, Conn.

each unit. They were sent to the lab every 75 hours of engine operation. During the test period, only one of the three propane-operated units required an oil change because of a timing problem that fouled the engine. The test was continued to determine how long the original oil could be used in the other two units.

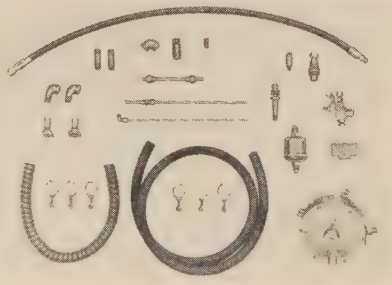
Oil Consumption—As of Jan. 13, 1955, one fork lift had operated 2693 engine hours without an oil change, and as of Jan. 27, 1955, one tug had operated 3031 engine hours without oil change.

A comparison of the amount of oil consumed and changed indicated that only 27 quarts were used in the propane units, compared with 103 quarts in the gasoline units.

Ignition System — During 1954, new points were installed only four times. No spark plugs were replaced. As of Jan. 1, 1955, one tug had operated 4300 engine hours on plugs installed at the beginning of the test. (It has been estimated that one engine hour of operation is equal to from 30 to 40 miles of road travel.)

Handling—To supply its fleet of tugs and trucks, Douglas Aircraft installed a 450-ft pipe line from the LP-gas storage tank to the garage service station so both gasoline and propane could be dispensed by one attendant. The company finds, under the proper conditions and with the correct equipment, that LP-gas is a safer fuel to handle than gasoline.

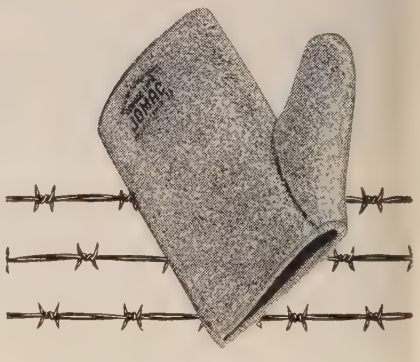
In making the conversion for Douglas, American Liquid Gas Corp., Los Angeles, used both the spud-in and LP-gas carburetor systems, depending on the equipment. With spud-in conversions, the existing gasoline carburetors are used.



Elements of an LP-gas conversion kit. Some are designed for use with an LP-gas carburetor and others use a spud-in block and the existing gasoline carburetor

Buy hand protection

Time out due to hand injuries costs industry more than any other plant accident. Skilled hands are your long suit. Protect them with Jomac® Work Gloves . . . durable, yet low in cost. Write today for our new catalog. Jomac Inc., Dept. E, Philadelphia 38, Pa.



Jomac Hand Guards, made of springy, tough Jomac Cloth, can be worn over gloves, if desired, to give maximum protection against sharp metal, blows or burns. They can be reconditioned repeatedly.

It pays to keep Jomacs on hand

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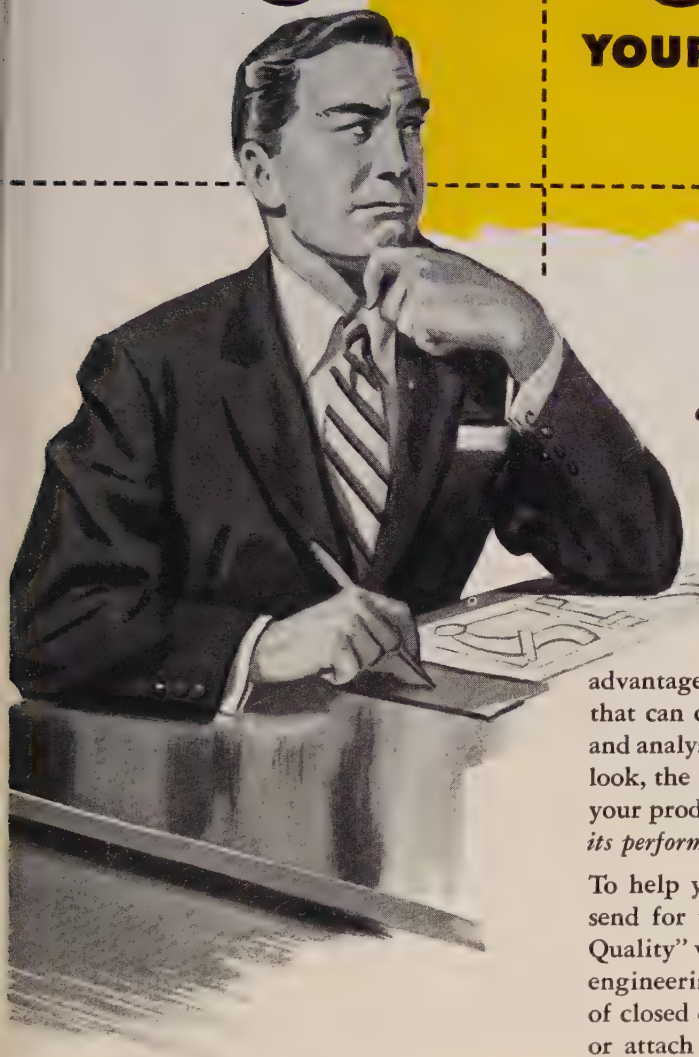
INDUSTRIAL WORK GLOVES

Outwear ordinary work gloves by 900%

Plants in Philadelphia, Pa., and Warsaw, Ind.

ARE THE PARTS IN *Your* PRODUCT YOUR OWN COMPETITION?



Finding better ways to improve your product and decrease its cost can begin with a **FORGING**

● Obviously, such a question is important. It means that you begin to consider the processes as well as the materials that eventually make up your product. Closed die forgings offer basic cost-saving advantages as well as scientific and engineering advancements that can contribute importantly to your successful evaluation and analysis. If it has been some time since you really took a close look, the conclusions may surprise you. Forgings can improve your product in many ways—*its cost*, its quality, *its salability* and *its performance.*

To help you evaluate the advantages of closed die forgings, send for this descriptive 64-page booklet* entitled "Metal Quality" which thoroughly discusses many of the engineering, production and economic advantages of closed die forgings. Write for your copy today, or attach coupon to your business letterhead.

**Distributed within Continental United States and Canada.*

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Please send 64-page booklet entitled, "Metal Quality—How Hot Working Improves Properties of Metal," 1953 Edition.*

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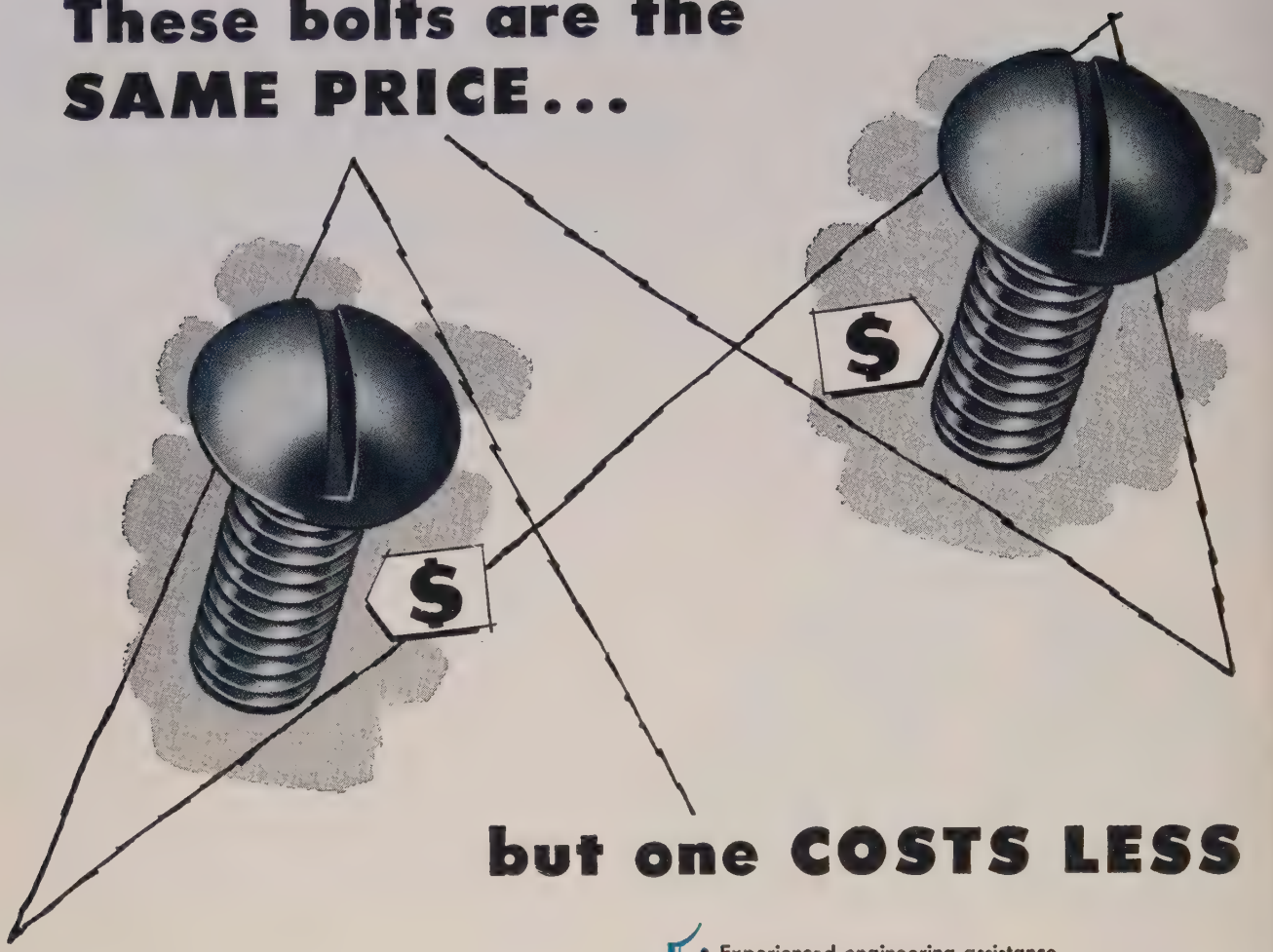
CLEVELAND 15, OHIO

These bolts are the SAME PRICE...



but one COSTS LESS

Granted that the price tag is the same on two bolts; how can one cost less?

The answer is obvious because no price tag tells the story behind the product. It doesn't show you the extra values that are as important as the price on the tag. By this reasoning, if you get *extra* value the product has, in effect, cost you less.

Listed here are some of the values that you gain every time you specify Lamson & Sessions.

- Experienced engineering assistance
- Modern research laboratories
- Statistical "Quality Control"
- Fast delivery from a COMPLETE line
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- Five conveniently located plants (17 sales offices and distributors in over 200 cities)
- 88 years of experience
- Qualified, salaried salesmen
- Reputation for fair and honest business practices
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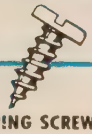
MACHINE SCREWS
Precision made for fast, economical assembly.

PLUG NUTS
Ideal for blind or hard-to-reach places.

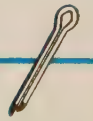


TAPPING SCREWS
Choice of round, pan, truss, flat oval, hexagon and Phillips heads.

CAP SCREWS
"1035" Hi-Tensile Heat-treated steel.

SQUARE AND HEX MACHINE SCREW NUTS
Also semi-finished, hot pressed and cold punched nuts.

LOCK NUTS
Economical, vibration proof. Can be used repeatedly.



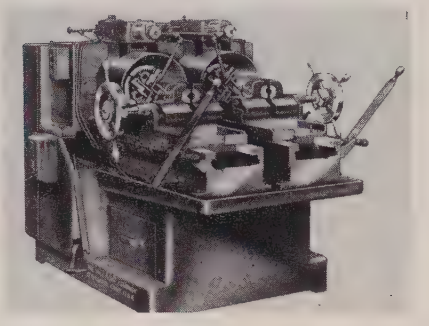
COTTER PINS
Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS
Cup point type, hardened and heat-treated.

NEW PRODUCTS and equipment

Write directly to the company for more information

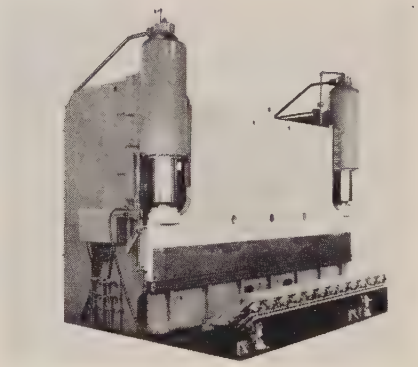
Heavy-Duty Threading Machine



The model XLA is designed to meet the varied requirements of plant maintenance and high-speed, accurate production work. It can be used to thread bolts, pipe, studs, etc., and for hollow milling and pointing. Tooling for all standard thread forms is available in a range of sizes.

Single and double-spindle designs come in 1, 1½, 2 and 2½-in. capacities. A constant-speed motor, with a V-belt drive to the four-step sheave, offers ample spindle speed to thread all diameters within the machine's range. Acme Machinery Div., Hill Acme Co., 1209 W. 65th St., Cleveland 2, O. Olympic 1-2400

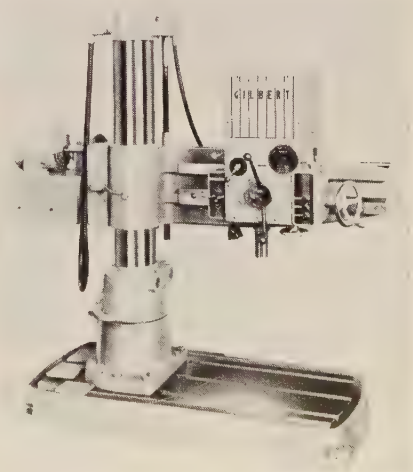
Hydraulic Stretch Press



Being used to form leading edges of wings for aircraft, the machine's over-all length is 16 ft. Its stretch jaws are 12 ft long.

Stretch-forming is used to make complex shapes by stretching material around a male die (plastic or kirksite). A pistol-grip control operates all press and stretch-forming equipment. It is a simple operation to convert the stretch press into a versatile press brake with a maximum tonnage of 500 tons, a stroke of 63 in. and an open height of 48 in. Pacific Industrial Mfg. Co., 848 49th Ave., Oakland 1, Calif. Andover 1-8303

Light-Duty, Radial-Drilling Machine



It comes in three, spindle-speed ranges: 40 to 1600, 50 to 2000 and 80 to 3200 rpm. Heat-treated, alloy-steel gears mounted on ground, integral, multiple-splined shafts permit 12 spindle speed changes. The machine is equipped with automatic spindle reverse. The spindle and spindle sleeve are counterbalanced by an adjustable spring mechanism. The spindle nose has a Morse taper hole fitted with a renewable, hardened tang slot.

The head is mounted on the arm on two, dove-tail slides. The weight of the head is carried on adjustable ball-bearing rollers which operate on a hardened and ground way. Safety features are included. The machine is built with 3 and 4-ft arms and a 9-in. column. Cincinnati Gilbert Machine Tool Co., Cincinnati 23, O. Kirby 4815

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fractional horsepower motor
(any quantity—20 to 20,000 units)
it will pay you
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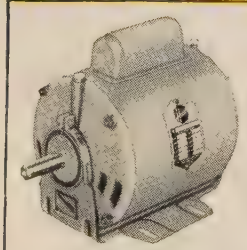
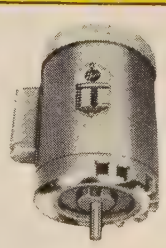


Compact—More Power per pound. Available with rigid, face or resilient mount as shown here. Split-phase, Capacitor-Start, or Polyphase.



Higher overload capacities, "Mylar"* insulation. Dripproof, or totally enclosed. For horizontal or vertical installation. *Du Pont Polyester film.

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Over 300 Hoover Agencies stand ready around the world to give your customers prompt attention.

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NEW PRODUCTS and equipment

Barrel Finishing Machine

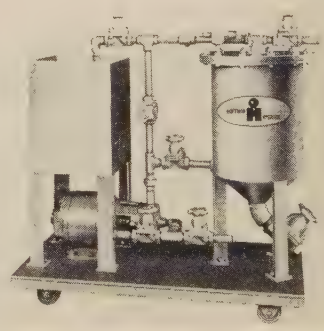
All moving parts of the VS model are enclosed. Safety features include a pivot-mounted gate, which closes when the machine is in operation, and a magnetic brake. All lubrication points are readily accessible.

The machine has a steel frame, with oversize pillow blocks and self-aligning bearings capable of

carrying full loads of steel burnishing media. The large space underneath the barrel facilitates rapid unloading. All controls are front-mounted at working height. This model is available with a 1½-hp motor for ordinary requirements, a 2-hp motor for heavy-duty work and a 3-hp motor for extra-heavy, finishing jobs. Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn. Tower 8511

Self-Cleaning Pressure Filter

Outstanding features are: Two valves control a backwashing device for filter cleaning; filtration is done at high pressure without leakage (up to 125 psi); tank ca-



pacities go up to 5000 gal; a longer filtration cycle is made possible by the increasing density of the filter

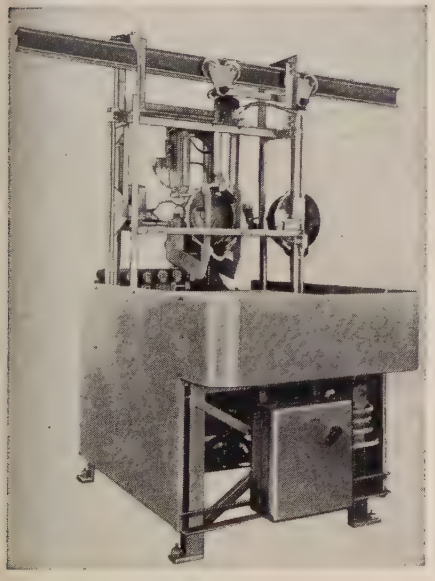
cake. No filter bags, sheets or pads are required. Carbon treating and filtering are performed in one operation. Filter aids are made of wood pulp, diatomaceous earth and carbon. The assembly consists of a precoating tank, a splashproof electric motor, pump, filter pressure chamber, valves for suction and discharge flow and a pressure gage. A stainless-steel, wire-wound, noncorrosive cylinder supports filter media.

The filter is designed to remove sludge formed by dissolving electrodes and to prevent dust, dirt and oil contamination of metal parts during plating operations. United States Hoffman Machinery Corp., 105 Fourth Ave., New York 3, N. Y. Oregon 7-3600

Conveyor Transfer Machine

It removes parts from the hooks of an overhead monorail conveyor and transfers them to a roller conveyor at the rate of 300 pieces per hour.

It will select certain parts and reject others from a conveyor. It can be arranged to pick up parts from a roller conveyor and place them on overhead monorail hooks,



or it can pick up parts from either a roller conveyor or a monorail conveyor and place them in a machine.

The machine is particularly adaptable to round parts similar

LEADING NONFERROUS DISTRIBUTORS in the United States and Canada now maintain large stocks of "Berylco" beryllium copper strip and rod, ready for immediate delivery—an indication of the wide acceptance for this versatile alloy.

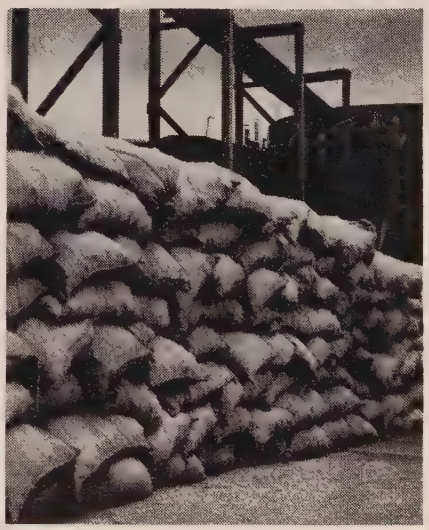
New marketing set-up saves you time and money

WAREHOUSE DISTRIBUTORS NOW STOCK "BERYLCO" BERYLLIUM COPPER FOR IMMEDIATE DELIVERY

Few industries these days have to be told about the advantages of beryllium and its alloys, particularly beryllium copper. The remarkable qualities of this alloy—its combination of strength and conductivity, its elasticity, its fatigue and corrosion resistance, its workability, its castability—have improved many old products, created many new ones.

And today, more than ever before, it looks as though beryllium copper is on its way to mass-production use. Raw materials, the Government says, are sufficient for both civilian and defense needs. The world's largest producer of beryllium copper, THE BERYLLIUM CORPORATION, has just completed a $2 million expansion program which will result in greater production, more forms, more sizes, closer tolerances, and, in some cases, lower prices. To top off this rosy picture, the appointment of a national network of distributors now makes popular sizes available for immediate delivery.

Testing samples are always available free of charge, and technical assistance is yours for the asking.



SUPPLIES OF BERYL ORE, raw material of the beryllium industry, are now more than adequate, according to the Bureau of Mines. An independent survey of world resources undertaken by THE BERYLLIUM CORPORATION drew the same conclusion.

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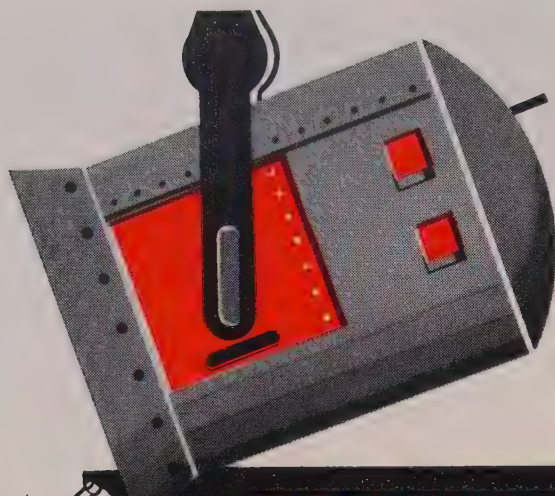

BUCKET BRIGADE

Jet airpower is the backbone of America's defense, and jet engines depend upon scientifically exact turbine vanes, turbine blades and supercharger buckets for power and performance.

To mass-manufacture these vital precision parts, Austenal applies the ancient "lost wax" method of investment casting, greatly improved and now called Microcast—a technique so precise and so accurate that Austenal turbine buckets and vanes eliminate costly machining and require only a minimum of finishing.

The Microcast process was developed by Austenal, and its use in the manufacture of vital jet components is only one of many applications. In every field of industry, Microcast is proving that complex, intricate metallic parts can be made better and more economically by investment casting.

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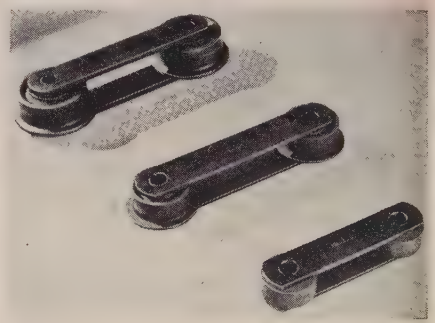
to those shown, but can be arranged to handle other shapes. General Tool Co., Landy Lane, Reading 15, O. Poplar 2244

Side Chain for Hinged-Steel Conveyor Belting

It is available in 2½, 6 and 9-in. pitches. Work-load capacities range from 1250 to 6750 lb per strand. The chain can be used for slat or apron conveyors, as well as drag and open-type chain conveyors.

The illustration shows one 6-in.

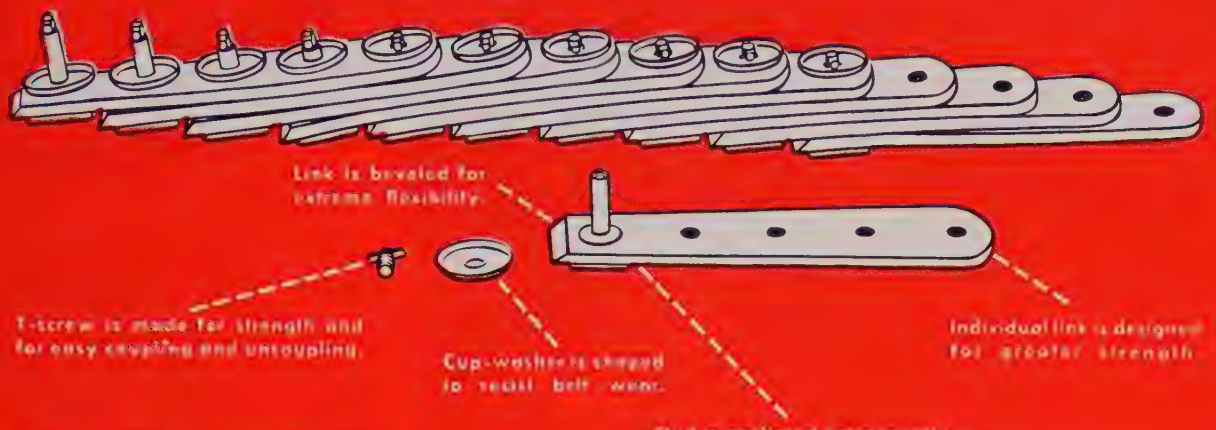


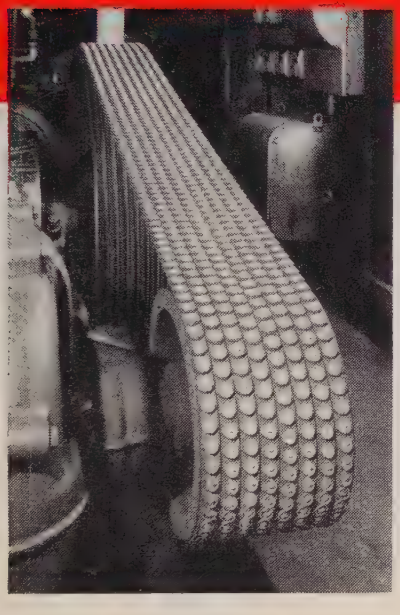
pitch and two 9-in. pitch roller blocks. This 6-in. unit has ¼ x 1¾-in. side bars and rollers 2½-in. in diameter which are made of alloy cast iron. With larger side bars, the chain features a work-load capacity of 4500 lb per strand. The 9-in. pitch units shown are equipped with single-flanged rollers. The center chain pitch has ¼ x 2-in.-high, carbon side bars and alloy cast iron rollers 3 in. in diameter. Working load is 4500 lb per strand. The heaviest chain, shown at top, has a 9-in. pitch. It incorporates ⅜ x 2-in. side bars and chilled rim rollers and roller bearings 4 in. in diameter. Working load is 6750 lb per strand. It is used on installations up to 1500 ft long. May-Fran Engineering Inc., 1725 Clarkstone Rd., Cleveland 12, O. Kenmore 1-2304

Blo-Core Shell Machine

Model W-1520 features a two-station operation (pattern sizes up to 15 x 20 x 14 in. draw and a universal blow head up to 20 lb). It eliminates core dries and ovens

This detailed line drawing of the new patented Veelos TD and TE v-belt makes it easy to see how this new v-belt is designed to do a better job . . . easier!


Link is beveled for extreme flexibility.
T-screw is made for strength and for easy coupling and uncoupling.
Cup-washer is shaped to resist belt wear.
Stud is anchored permanently in the link for added durability.
Individual link is designed for greater strength



New VEELOS

TD and TE Adjustable V-belt

So easy to couple *it installs in minutes*

So strong and durable *it lasts for years*

The new Veelos TD and TE adjustable v-belt is the successful development of a specific v-belt designed for a specific service—D and E drives.

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It lasts longer—is more flexible. New high-tensile strength link combined with new stud, cup-washer, and T-screw gives added durability. New link construction provides maximum flexibility for cooler, wear-resistant running.

Get the complete story of this great new v-belt for D and E drives. Send coupon now for new 8-page illustrated catalog.

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THE LINK
V-BELT

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613 Manbel St., Manheim, Pa.

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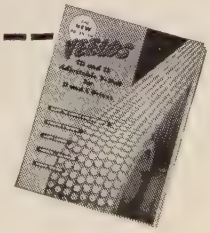

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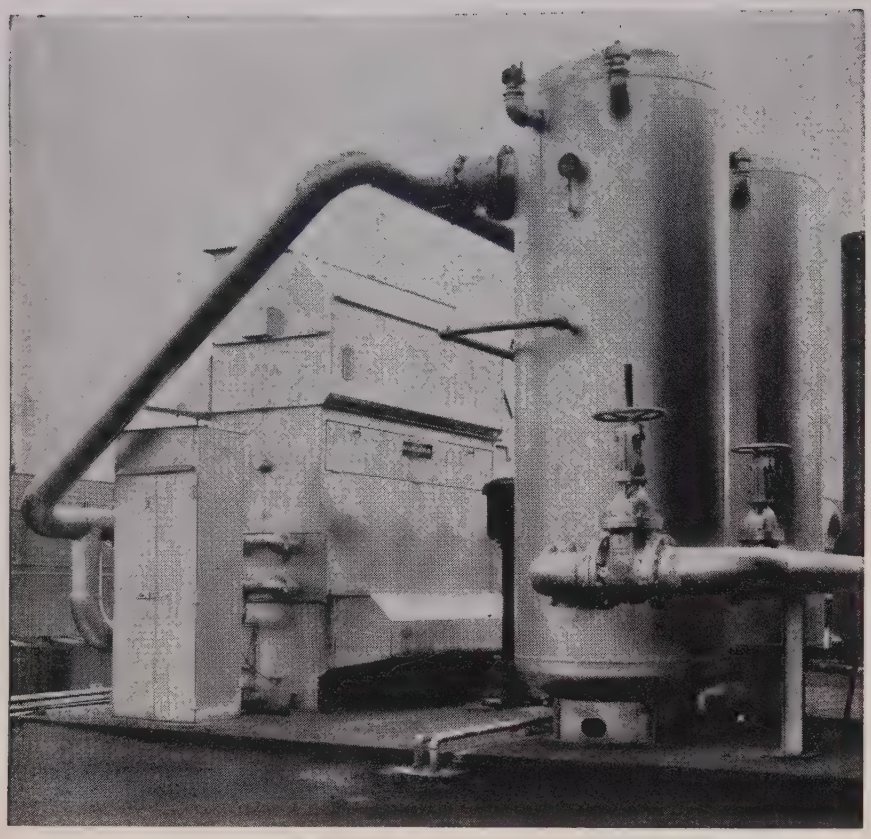
ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE



HOW YOU SAVE,

Getting Drier Compressed Air

● Direct saving in the cost of cooling water saves the price of the Niagara Aero After Cooler (for compressed air or gas) in less than two years.

Extra, for no cost, the drier air gives you a better operation and lower costs in the use of all air-operated tools and machines, paint spraying, sand blasting or moisture-free air cleaning. Water saving also means less expense for piping, pumping, water treatment and water disposal, or you get the use of water elsewhere in your plant where it may be badly needed.

Niagara Aero After Cooler assures all these benefits because it cools compressed air or gas below the temperature of the surrounding atmosphere; there can be no further condensation in your air lines. It condenses the moisture by passing the air thru a coil on the surface of which water is evaporated, transferring the heat to the atmosphere. It is installed outdoors, protected from freezing in winter by the Niagara Balanced Wet Bulb Control.

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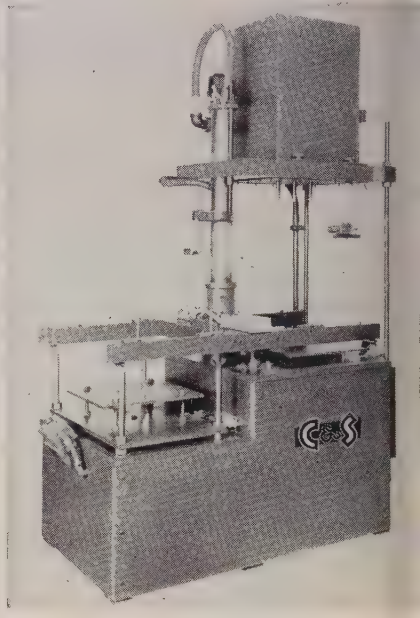
and finishes shell cores or molds in 20 seconds.

The machine blows resin-coated sands into heated core boxes at low pressures to produce shell cores. Shell molds are produced the same way in heated patterns or die cavities. Curing commences



immediately. All air operations are initiated by solenoid valves. Heater plate temperatures are thermostatically controlled, assuring uniform production. C & S Products Co., 14841 Meyers Rd. Detroit 27, Mich. Broadway 3-1681

Electric Chain Hoist

The CM Lodestar features shock-proof, pushbutton control, sealed-in lifetime lubrication, a self-adjusting, heavy-duty brake, overload protection and components which are fully enclosed and protected. Safety limit switches are installed in the lightweight, compact hoist. A jam-proof chain guide and nonkinking, flexible-link, CM-Alloy chain permit the Lodestar to be used for extreme angle pulling. The single-phase model (without contractor) can be used for side pulling. The hoist can be used upside down when it is inconvenient to install an overhead hoist for small jobs. All swivel hooks

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SANDVIK has a wide variety of *specialized* high carbon and alloyed strip steels, each "custom-tailored" by composition and processing, to meet the demands of a specific type of service.

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Complete information and technical advice is available on request. SS-25

SOME SANDVIK SPECIALTY STRIP STEELS

Band Saw Steels • Camera Shutter Steel • Clock and Watch Spring Steels • Compressor Valve Steel • Doctor Blade Steel • Feeler Gauge Steel Flapper Valve Steel • Knife Steels • Matrix Band Steel • Needle Cutter Steel • Piston Ring Segment and Expander Steels • Razor Blade Steel Reed Steel • Shim Steel • Shock Absorber Steel Sinker Steel • Spring Steels • Textile Steel Vibrator Reed Steel

SANDVIK STEEL, INC.

111 EIGHTH AVE., NEW YORK 11, N. Y. . . . WAtkins 9-7180

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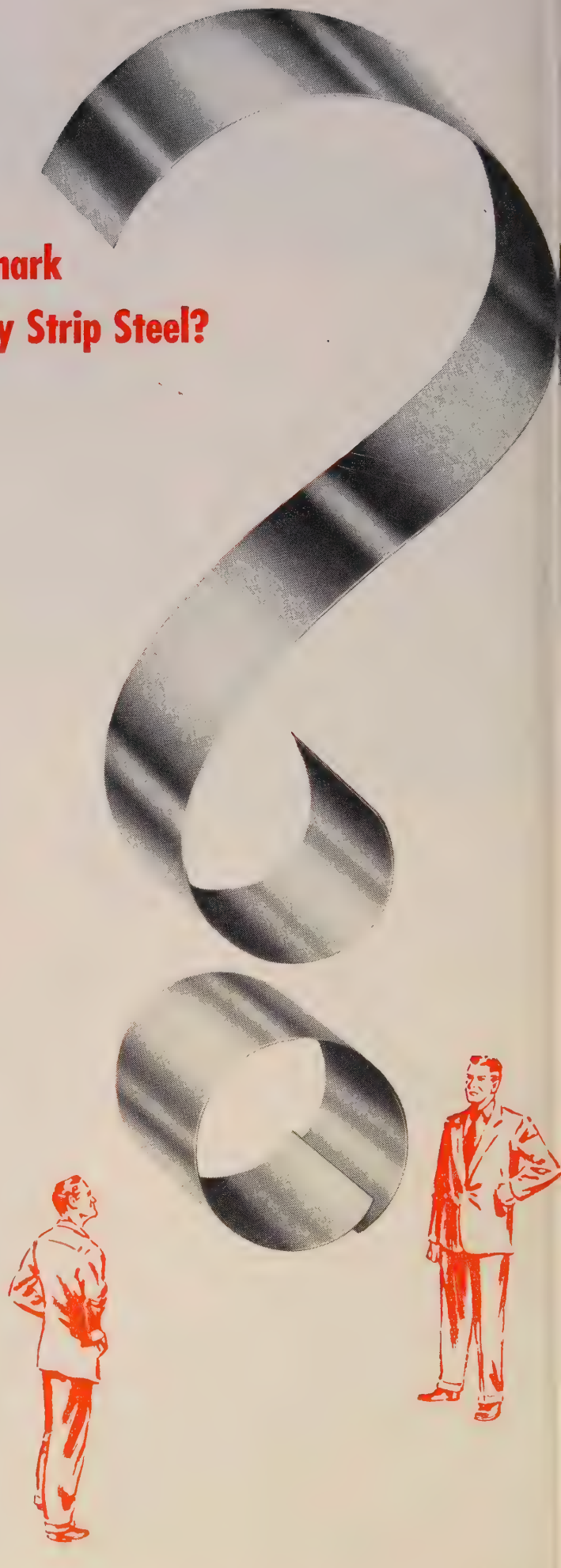
1736 Columbus Rd., Cleveland 13, Ohio, CHerry 1-2303
3609 E. Olympic Blvd., Los Angeles 23, Cal., ANgelus 3-6761
SANDVIK CANADIAN LTD., P. O. Drawer 430, Station O, Montreal 9, P. Q.

Sandvik Quality Steels



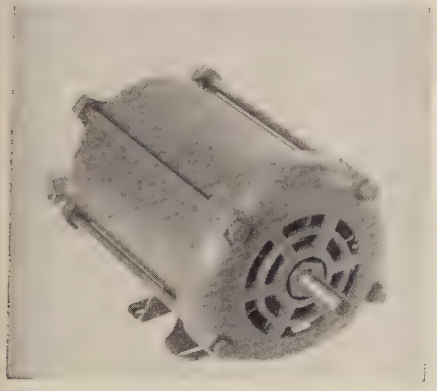
lugs and adapters are interchangeable.

The hoist is available in capacities from ⅛ to 1 ton for operation on single-phase, 115 v and 3-phase, 208-220/440 v, 60-cycle

power. The 3-phase models are factory wired for 220 and 440 v. They can be converted from one to the other in minutes. The ¼-ton model weighs 51 lb. Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y. Jackson 2230

Fractional Horsepower, Explosion-Proof Motor

This motor has been designed for use in hazardous atmospheres, such as those found in dry-cleaning plants, paint factories and gasoline refineries. It is constructed with heavy cast iron end shields for ex-



tra protection. Overbolt construction gives the motor assembly additional strength with little increase in weight.

According to GE engineers, the motor will give 10 years of normal service without relubrication. Use of a new ball-bearing grease (highly resistant to oxidation and mois-

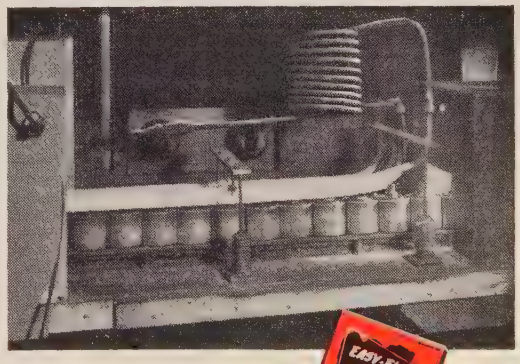
Only 4 seconds to make this oil and air-tight joint with EASY-FLO 45

HERE'S A TYPICAL EXAMPLE of the reasons why the EASY-FLO low-temperature silver brazing alloys are so extensively used in the automotive and aviation industries. It shows how easy it is to get fast production of high-strength liquid and gas-tight joints with these alloys. And note that no brazing skill is needed. All this adds up to metal joining costs that are surprisingly low.

EASY-FLO 45 WIRE RING

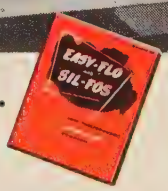
The unit is a pressure switch which is part of the Studebaker anti-creep "hill holding" device. The job is brazing the threaded spud into the cover. Operator sets covers in cylindrical holders on an endless chain and in the covers she places the spuds, each one with a ring of EASY-FLO 45 preplaced. Assemblies pass thru an induction heating coil (below) — 14 a minute.

Photos and data courtesy of FASCO Industries, Inc., Rochester, N.Y.



Expert brazing production know-how at your service

Without obligating you in any way, we'll send a field service engineer to help you work out similar fast, economical production set-ups on your brazing jobs. Just write and say when you would like him to call.



FOR EASY-FLO FACTS IN PRINT . . .
write for Bulletin 20.

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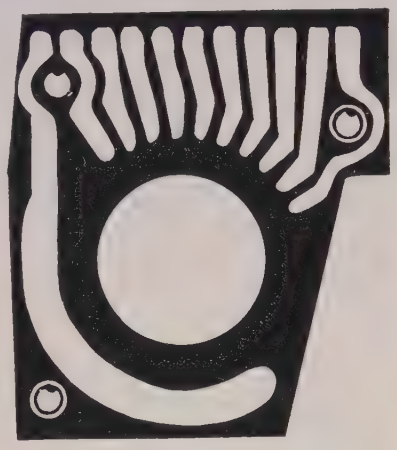
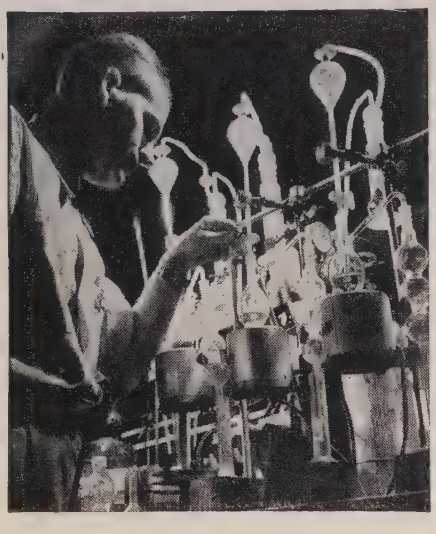
What's going on in NON-FERROUS METALS

. . . solder made on automatic machines

is more precisely compounded and free of flaws. Used increasingly for printed circuits (as pictured at right) in the electronics field, for sheet metal work, and for general soldering everywhere in industry. Called CASTOMATIC® solder, it is made on patented machines, by Federated only. Write for 36-page "Solder" brochure.



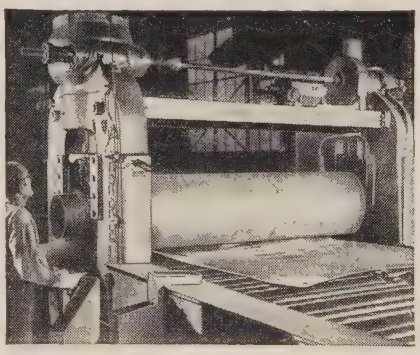


. . . zinc dust for the chemical industry

is an effective chemical reducing agent; yields salable by-products; costs less than other reducing agents. It is also used in paints which protect against corrosion.

. . . sheet lead for radiation protection

is used in the new Deep Therapy room of Seattle's Swedish Hospital. Federated supplied metallurgical help and all the lead. Through Federated, American industry has access to the acknowledged center of lead research and technical service. Ask for 48-page "Lead Handbook".



Federated people work constantly with copper, tin, lead, zinc and other non-ferrous metals. The company makes thousands of non-ferrous items. That is why it has earned the name **"Headquarters for Non-ferrous metals."**

Federated Metals

DIVISION OF AMERICAN SMELTING AND REFINING COMPANY
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IN CANADA: FEDERATED METALS CANADA, LTD., TORONTO AND MONTREAL
ALUMINUM, MAGNESIUM, BABBITTS, BRASS, BRONZE, ANODES, ZINC DUST, DIE CASTING METALS, LEAD AND LEAD PRODUCTS, SOLDERS, TYPE METALS

Federated first in the non ferrous field FMD

NEW PRODUCTS and equipment

ture) makes extra long service with minimum maintenance possible. The motor has been tested by Underwriters' Laboratories and approved for Class I, Group D and Class II, Groups E, F and G atmospheres. General Electric Co., General Purpose Component Motor Dept., Schenectady 5, N. Y. Schenectady 4-2211

Operatorless Industrial Trucks

The photograph shows a fully loaded tractor train making its way through a plant to the shipping room without the benefit of an operator. The train follows a route set by a guide wire strung from the ceiling. Completely automatic, the Guide-O-Matic truck

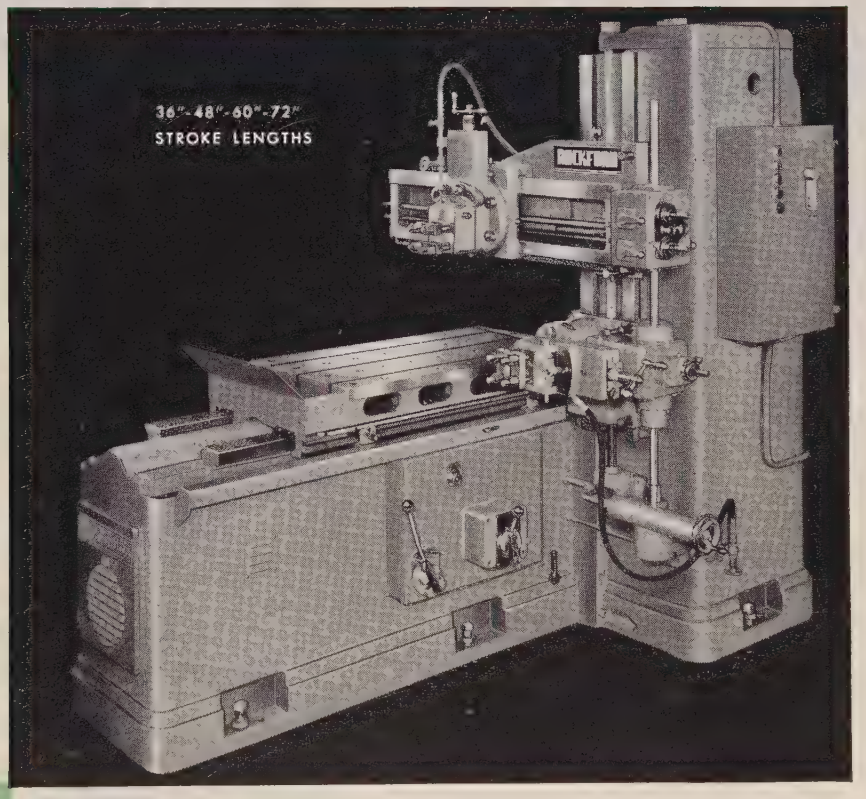
moves in a steady path to its destination at any speed. Radio waves, transmitted over the wires by signal boxes installed throughout the plant, control the truck. To call a truck, a button is pressed calling it to the station from which the signal originated.

A "sniffer" box mounted on the truck or tractor picks up waves from the guide wire overhead. This box contains an electronic brain that instantly answers commands, causing the train to follow the route set by the guide wire. The guide wire is strung from the ceiling along the routes and into bays, stock and shipping room. It may be laid in a slot in the floor. Barrett-Cravens Co., 628 Dundee Rd., Northbrook, Ill. Northbrook 2300

fast, economical production calls for HYDRAULIC

hydraulic openside shapers

HYDRAULIC



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Hydraulic Drive is a natural for reciprocating-type machine tools. It provides smooth, powerful cutting, fewer moving parts, and longer useful life.

Hydraulic Openside Shapers reciprocate the work instead of the tool and produce planer accuracy with shaper speed. When you modernize your production facilities plan on Hydraulic Shapers, Planers and Slotters to provide the fastest, most economical production methods.

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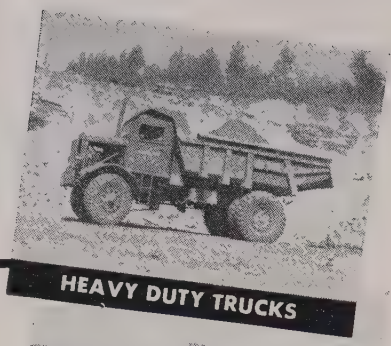
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NEW Literature

Write directly to the company for a copy

Phosphate Coating

"Phosphate Coating Comes of Age" describes seven types of conversion coatings most commonly used in industry today and explains the mechanism of the phosphate coating formation — 8 pages. Metalwash Machinery Corp., 925 North Ave., Elizabeth 4, N. J.

Trimming Equipment

The operation of its trimming die and trimming press is detailed. Applications in the metalworking industry are pointed out—11 pages. Steel Products Engineering Co., 1205 W. Columbia St., Springfield, O.

Stainless Tubing & Pipe

Complete details on Carpenter 7Mo stainless tubing and pipe are given in this product bulletin—4 pages. Carpenter Steel Co., Alloy Tube Div., Union, N. J.

Uranium

"Mesa Miracle" describes the fast-growing uranium industry on the Colorado Plateau—36 pages. United States Vanadium Co., Room 308, 30 E. 42nd St., New York 17, N. Y.

Shoring

The use of steel-panel scaffolding to shore concrete forms is described and illustrated. Savings are said to range from 20 to 40 per cent—24 pages. Universal Mfg. Corp., Zelienople 25, Pa.

Steel Strapping Seal

Information on steel strapping and accessories is offered. Copper-plated seals (they lock the strapping in place) are standard. Write for samples—Allegheny Steel Band Co., Box 716, Pittsburgh 30, Pa.

Tubing

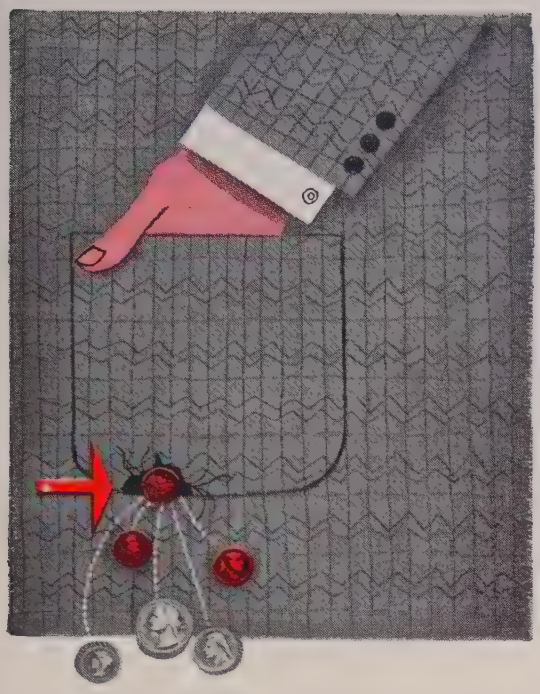
An analysis of standard carbon, alloy and stainless tubing steels is offered—Technical Data Card 177, 4 pages. Babcock & Wilcox Co., Tubular Products Div., 161 E. 42nd St., New York, N. Y.

Tool Catalog

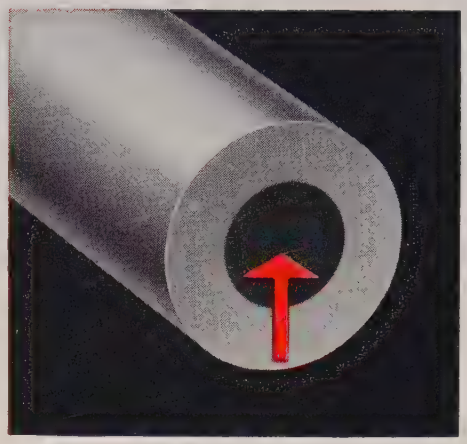
This catalog on precision tools, dial indicators, saws and ground, flat stock includes illustrations which show the tools in detail. It is indexed and crossreferenced—No. 27, 464 pages. L. S. Starrett Co., Athol, Mass.

Pneumatic Controls

This handbook describes pneumatic controllers, their applications and how they work. Pneumatic trans-



a hole here costs money...



a hole here saves money

Crucible Hollow Tool Steel Bars put savings into the pockets of the metalworking industry. There's no need for costly drilling, boring, cutting-off or rough-facing operations. For the hole is already in the steel you buy. You save production time, machine capacity—avoid scrap losses.

Crucible Hollow Tool Steel Bars are now available in any of our famous tool steel grades . . . in almost any combination of O.D. and I.D. sizes. And you get *immediate* delivery of five popular grades — KETOS oil-hardening, SANDERSON water-hardening, AIRDI 150 high-carbon high-chromium, AIRKOOL air-hardening, and NU DIE V hot-work tool steels.

Your Crucible representative can show you how to save time and money with Crucible Hollow Tool Steel Bars. *Crucible Steel Company of America, Oliver Building, Pittsburgh 30, Pa.*

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The reasons for the growth and national acceptance of the commercial heat treating industry are numerous, but fundamentally are based upon one important factor namely "Completeness of Service" from A to Z—all under one roof.

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If you are faced with heat treating problems or the need for heat treating services consult your Commercial Heat Treater.

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Detroit, Michigan

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Lyndhurst, New Jersey

Bennett Heat Treating Co., Inc.
Newark 5, New Jersey

Commercial Metal Treating, Inc.
Bridgeport, Connecticut

Cook Heat Treating Co. of Texas
Houston 11, Texas

Dayton Forging & Heat Treating Co.
Dayton 3, Ohio

The Drever Company
Philadelphia 33, Pennsylvania

Greenman Steel Treating Company
Worcester 5, Massachusetts

Fred Heinzelman & Sons
New York 12, New York

Alfred Heller Heat Treating Co., Inc.
New York, New York

Hollywood Heat Treating Company
Los Angeles 38, California

L-R Heat Treating Company
Newark 5, New Jersey

Lakeside Steel Improvement Company
Cleveland 14, Ohio

Metallurgical, Inc.
Kansas City 8, Missouri

Metallurgical, Inc.
Minneapolis 14, Minnesota

Metlab Company
Philadelphia 18, Pennsylvania

Metro Heat Treat Corporation
New York 13, New York

New England Metallurgical Corp.
South Boston 27, Massachusetts

Paulo Products Company
St. Louis 10, Missouri

Pittsburgh Commercial Heat Treating Co.
Pittsburgh 1, Pennsylvania

Queen City Steel Treating Co.
Cincinnati 25, Ohio

J. W. Rex Company
Lansdale, Pennsylvania

Stanley P. Rockwell Company
Hartford 5, Connecticut

C. U. Scott & Son, Inc. (Stainless Steels)
Rock Island, Illinois

Syracuse Heat Treating Corp.
Syracuse 3, New York

Winton Heat Treating Co.
Cleveland 16, Ohio

METAL TREATING INSTITUTE

This advertisement sponsored by these Companies which are members of the Metal Treating Institute.

mission systems and cascade, ratio and other interconnected control systems are also covered—bulletin 1120, 44 pages. Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.

Shaped Wires

Ways to reduce machine costs with Page shaped wire are covered in this illustrated book—16 pages. American Chain & Cable Co., Page Steel & Wire Div., Monessen, Pa.

Electric Truck

All the features, specifications and dimensions of the Warehouser electric truck with Extend-A-Forks are outlined—catalog 1505, 4 pages. Yale & Towne Mfg. Co., Yale Materials Handling Div., 11000 Roosevelt Blvd., Philadelphia 15, Pa.

Plant Growth

This brochure illustrates this company's growth and development. Its line of products, services and facilities are covered—Grand Rapids Brass Co., division, Crampton Mfg. Co., Grand Rapids, Mich.

Transformers

Basic, up-to-date information on instrument transformers is offered in this Buyer's Guide—GEC-1028, 100 pages. General Electric Co., Schenectady 5, N. Y.

Brazing

This manual is concerned with the application of major brazing methods, using silver alloys, filler metals, fluxes and gas atmospheres—catalog 925, 24 pages. Air Reduction Sales Co., division, Air Reduction Co. Inc., 60 E. 42nd St., New York 17, N. Y.

Rubber Expansion Joints

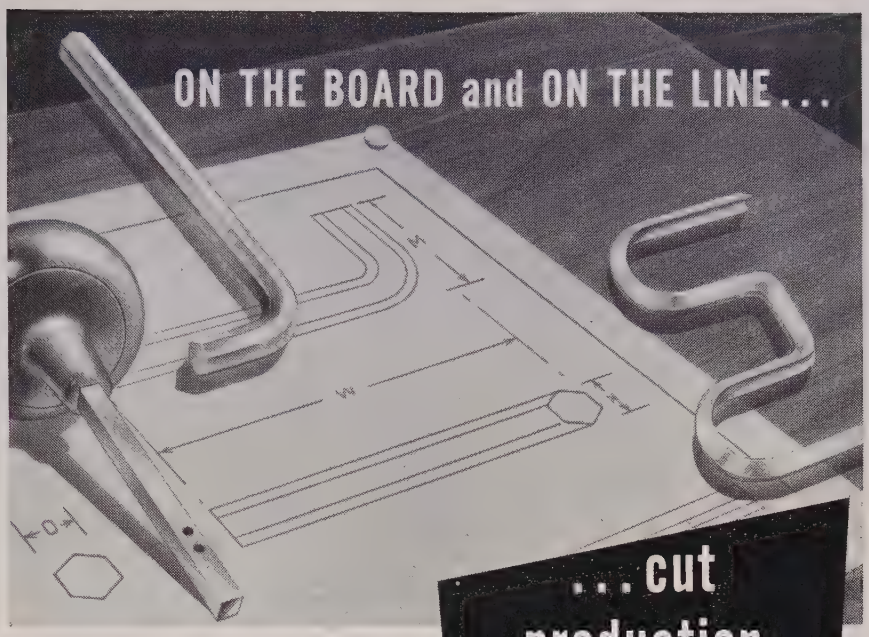
These joints (Garlock 209) relieve stresses and strains in piping, absorb vibration and eliminate noise. Complete information is available—folder AD-137, 8 pages. Garlock Packing Co., Palmyra, N. Y.

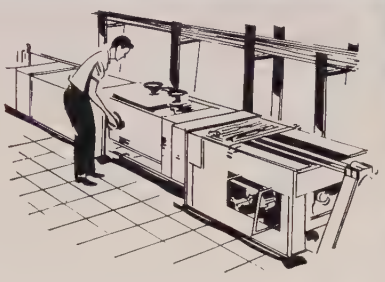
Direct-Current Motors

The Super T line of direct-current motors (with dynamic response) is detailed. Photographs, diagrams, charts and sketches illustrate dynamic response—bulletin C-2002, 11 pages. Reliance Electric & Engineering Co., 1088 Ivanhoe Rd., Cleveland 10, O.

Carbon Steel Tubing

Details are given on the use of this tubing for heat exchangers and condensers. A typical specification





...cut production costs with CONTINENTAL® Special Shaped Wire

You can engineer greater savings in production when you use Continental round or special shaped wire. Usually you can reduce costs on expensive forging, stamping and rolling operations by using Continental special shaped wire. For product-trim or as a basic component, the right wire can help you cut corners—and you can get the right wire at Continental. We have solved countless problems in supplying wire for thousands of applications, in a great range of sizes and shapes, temper, finish and analysis in low or medium low carbon. Before you fill any wire need—check with Continental, wire headquarters for many firms. Write us today.

STANDARD AND SPECIAL WIRE SHAPES

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oval	grooved flat wire
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Producers of Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

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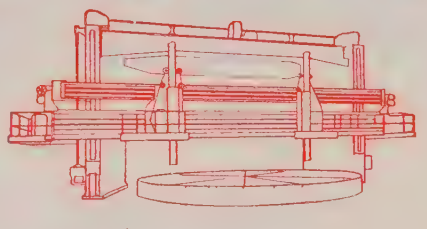
Investigate the important production, maintenance and tax savings of SIMMONS ENGINEERED REBUILDING for your: Lathes, Planers, Surface Grinders, Cylindrical Grinders, Vertical Millers, Openside Planers, Automatics, Vertical Boring Mills, Turret Lathes and Radial Drills.

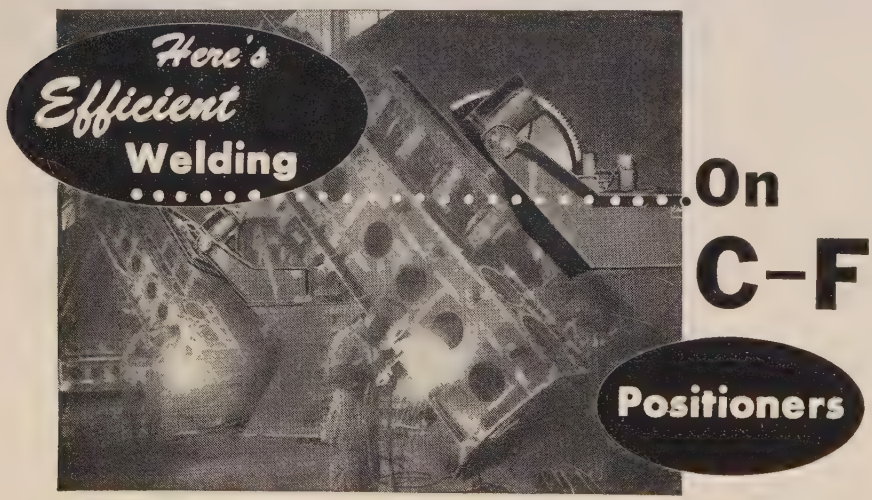
A qualified Simmons rebuilding engineer will discuss it with you. Write, wire or phone today. Simmons Machine Tool Corporation, 1755 North Broadway, Albany 1, N. Y.



Write for Simmons Way... case histories of rebuilding jobs.

SIMMONS GIVES MACHINE TOOLS A NEW LEASE ON LIFE

Unconditional guarantee... our standard since 1910



When heavy, unwieldy weldments like these diesel crankcases can be quickly swung into any position so that every weld is made *downhand*—that's efficient welding!

Welders spend more time welding — do better welding at lower cost when they work with C-F Positioners because these hand and/or power operated machines reduce positioning time to a minimum. Investigate the cost-saving advantages of C-F Positioners. They pay their way in any company.

Write for Bulletin WP26 — an illustrated circular detailing the *Specific* advantages of C-F Positioners.

CULLEN-FRIESTEDT CO.
1308 S. Kilbourne Ave., Chicago 23

CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

C-F positioned welds mean better, more economical welds

HELPFUL LITERATURE

(ASTM A-214) has been broken down to show how Electrunite tubing is processed to meet requirements. Photographs show production operations—brochure HEC-1, 10 pages. Republic Steel Corp., Steel and Tubes Div., 224 E. 131st St., Cleveland 8, O.

Planned Weldment

Acme explains planned weldment fabrication. Advantages of this method are listed—6 pages. Acme Welding Div., United Tool & Die Co., New Britain Ave., West Hartford 10, Conn.

Titanium and Its Alloys

Reports cover a number of subjects, including life of high-speed steel tools in turning and shaping operations, drilling, tapping, surface finishing, band sawing, brazing and soldering—42 reports, $40 a package. U. S. Department of Commerce, Office of Technical Services, Washington 25, D. C.

Broaches

This catalog describes the types of broaches which are available. Applicable internal and surface broaching operations are described—Catalog 450, 32 pages. American Broach & Machine Co., division, Sundstrand Machine Tool Co., Ann Arbor, Mich.

Blast Cleaning

The air-operated Vacu-Blaster is used in deep-groove, multipass welding, as well as cleaning before and after welding. Operating advantages are covered—4 pages. Vacu-Blast Co. Inc., Box 885, Belmont, Calif.

Bucket Elevators

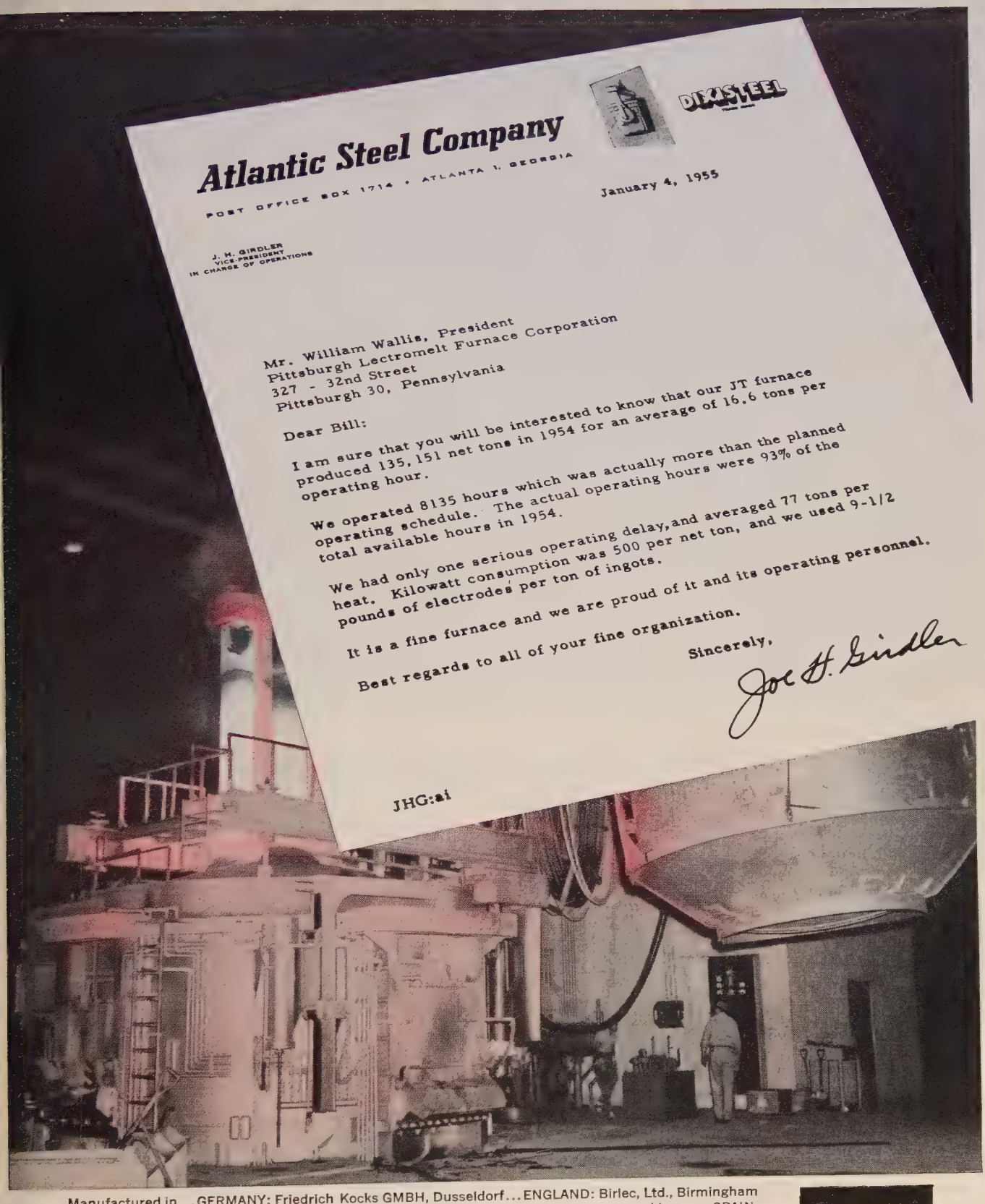
A complete line of bucket elevators and accessories is described in detail. Specifications are included. Photographs supplement text—catalog BE-55, 80 pages. Webster Mfg. Inc., Tiffin, O.

Brushing Lathe

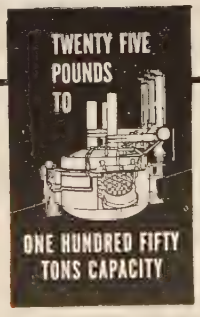
The brushing lathe (for deburring, finishing, polishing and buffing) and universal workpiece holder are described. Possible setups are illustrated—6 pages. Fuller Brush Co., Hartford 15, Conn.

Iron Phosphate Coatings

"How To Apply Iron Phosphate Coatings to Steel in Preparation for Painting" discusses advantages of Oakite CrysCoat, how it works and the recommended procedure for using it—12 pages. Oakite Products Inc., 134E Rector St., New York 6, N. Y.


Atlantic Steel Company
POST OFFICE BOX 1714 • ATLANTA 1, GEORGIA
DIXISTEEL
January 4, 1955
J. H. GIRDLER
VICE-PRESIDENT
IN CHARGE OF OPERATIONS
Mr. William Wallis, President
Pittsburgh Lectromelt Furnace Corporation
327 - 32nd Street
Pittsburgh 30, Pennsylvania
Dear Bill:
I am sure that you will be interested to know that our JT furnace produced 135,151 net tons in 1954 for an average of 16.6 tons per operating hour.
We operated 8135 hours which was actually more than the planned operating schedule. The actual operating hours were 93% of the total available hours in 1954.
We had only one serious operating delay, and averaged 77 tons per heat. Kilowatt consumption was 500 per net ton, and we used 9-1/2 pounds of electrodes per ton of ingots.
It is a fine furnace and we are proud of it and its operating personnel.
Best regards to all of your fine organization.
Sincerely,
Joe H. Girdler
JHG:ai

Manufactured in... GERMANY: Friedrich Kocks GMBH, Dusseldorf... ENGLAND: Birlec, Ltd., Birmingham ... FRANCE: Stein et Roubaix, Paris... BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege ... SPAIN: General Electrica Espanola, Bilbao ... ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co., Ltd., Nagoya



*REG. T. M. U. S. PAT. OFF

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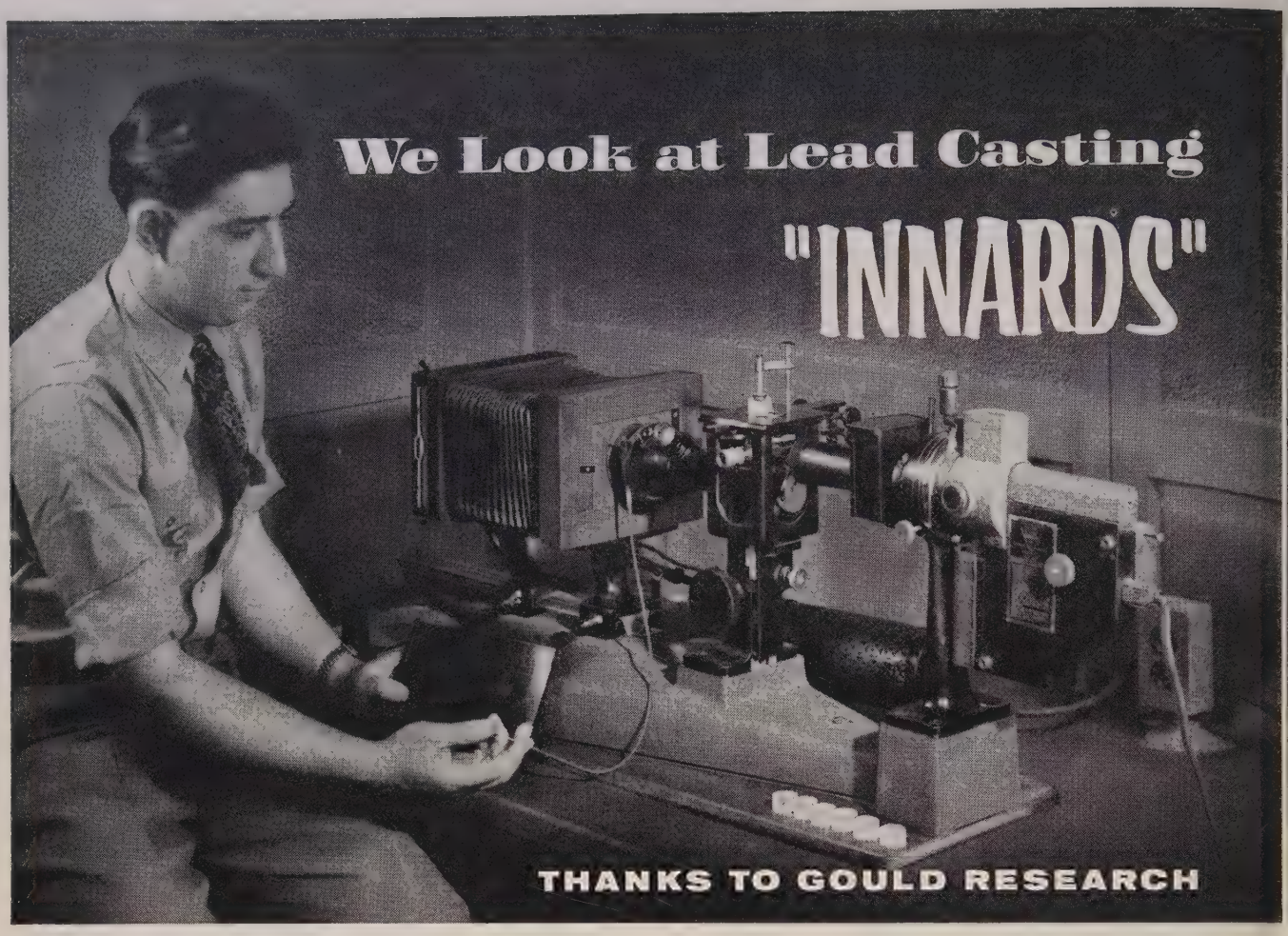

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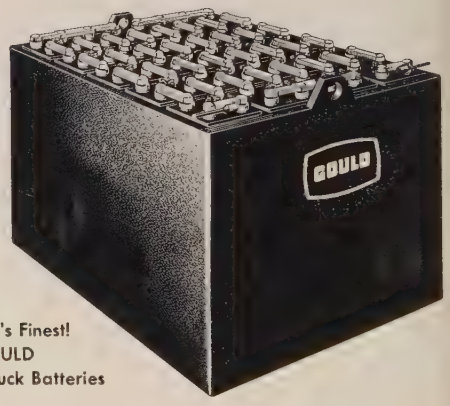

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STEEL
April 4, 1955

Market Outlook

STEEL BUSINESS is good, but don't let its rosy glow blind you.

Sane buying is still good practice.

From the high rate of steel production and demand for light, flat-rolled forms of steel, you might get a distorted view of demand and supply.

CENTER OF DEMAND—Analyze the demand, and you'll find that it's centered in the light, flat-rolled products, principally cold-rolled carbon sheets. In January, for instance, 41.9 per cent of mill shipments of finished steel were sheets and strip, compared with 34.5 per cent in all of 1954.

Demand for cold-rolled sheets probably will get no stronger, may subside. The largest user of them—the automobile industry—is likely at its production peak. Its needs for the last half of this year should be less than for the first half. That should take some of the pressure off the light, flat-rolled products.

THE PEAK?—Already, some leveling off in sheet buying is noted. This isn't the result of decreased consumption. It stems principally from extended bookings: Consumers and producers are reluctant to commit themselves any further ahead. But there should be less incentive to order for third-quarter delivery than in the first and second quarters. Not only should auto needs be less then, but so should those of many consumers who will be taking time out for summer vacations. Too, the beat-a-price-rise incentive will be lacking after the second quarter. If steelworkers' wages increase and bring a steel price rise, it will come at the beginning of the third quarter.

AN EXCEPTION—Even though mills have been pressured for the light, flat-rolled products, the warehouses have not. Cost-conscious consumers have tried to concentrate their orders on mills. While consumers have needed steel, they haven't needed it badly enough to pay warehouse prices for it. Until warehouses feel the same heavy demand as mills, there'll be no widespread resort to conversion and premium-price deals.

While there may be no further rise in demand for the light, flat-rolled goods, the heavier products, such as structurals and plate, will become tighter. They've already moved in that direction.

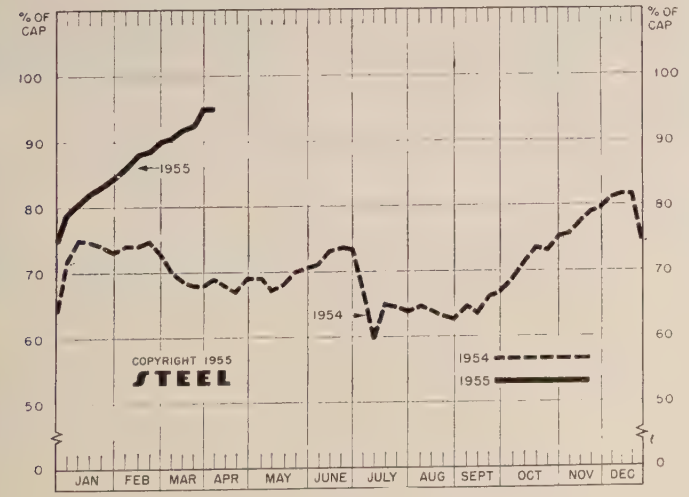
A BALANCER—So, when some products decline in demand, others will rise, assuring a reasonably good, although lower, steel operating rate in the last half of the year (STEEL, Mar. 28, p. 121).

A 95-per-cent operating rate is about the highest that can be expected. Above that level mills would be using marginal facilities. They will be used only in an emergency or when there is an assured long-time capacity demand for steel. Neither exists now.

HALTS CLIMB—Significantly, the steel ingot production rate in the week ended Apr. 3 quit climbing for the first time this year. It halted at 95 per cent of capacity.

PRICE TRENDS—Steel prices remained stable and held STEEL's finished steel price composite at $118.23 a net ton. STEEL's scrap price composite edged down to $37.41 a gross ton from the preceding week's $37.75. Industrial scrap is coming out in good volume.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Apr. 3	Change	Same Week 1954	Same Week 1953
Pittsburgh	96	— 1*	75	78
Chicago	96.5	— 0.5*	79	107.5
Mid-Atlantic	94	+ 2	61	97
Youngstown	96	0	70	106
Wheeling	89.5	— 4	67.5	101
Cleveland	101	+ 5*	57.5	99
Buffalo	99	0	67.5	106.5
Birmingham	87.5	0	75.5	99
New England	70	— 6	65	92
Cincinnati	88	+ 1	67	97
St. Louis	95	0	62	81
Detroit	90	0	89	107
Western	98	+ 2	76	112
National Rate	95	0	69	95

INGOT PRODUCTION‡

	Week Ended Apr. 3	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	140.6†	140.8	138.1	102.6
NET TONS (In thousands)	2,258†	2,262	2,218	1,648

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

Metalworking Outlook—p. 29
Technical Outlook—p. 77

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Mar. 29 1955	Mar. 22 1955	Month Ago	Mar. Average
(1947-1949=100)	144.7	144.7	144.7	144.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Mar. 29

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.525	Strip, C.R., Carbon	7.493
Rails, Light, 40 lb	5.917	Strip, C.R., Stainless, 430 (lb)	0.415
Tie Plates	5.275	Strip, H.R., Carbon	5.113
Axles, Railway	7.500	Pipe, Black, Buttweld (100 ft)	15.000
Wheels, Freight Car, 33 in. (per wheel)	48.500	Pipe, Galv., Buttweld (100 ft)	18.605
Plates, Carbon	4.675	Pipe, Line (100 ft)	146.804
Structural Shapes	4.517	Casing, Oil Well, Carbon (100 ft)	154.216
Bars, Tool Steel, Carbon (lb)	0.430	Casing, Oil Well, Alloy (100 ft)	227.875
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.525	Tubes, Boiler (100 ft)	‡
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.115	Tubing, Mechanical, Carbon	‡
Bars, Tool Steel, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.610	Tubing, Mechanical, Stainless, 304 (100 ft)	161.193
Bars, H.R., Alloy	8.875	Tin Plate, Hot-dipped, 1.25 lb	8.533
Bars, H.R., Stainless, 303 (lb)	0.423	Tin Plate, Electrolytic, 0.25 lb	7.233
Bars, H.R., Carbon	5.000	Black Plate, Canmaking Quality	6.333
Bars, Reinforcing	4.963	Wire, Drawn, Carbon	7.938
Bars, C.F., Carbon	8.160	Wire, Drawn, Stainless, 430 (lb)	0.545
Bars, C.F., Alloy	11.375	Bale Ties (bundle)	5.860
Bars, C.F., Stainless, 302 (lb)	0.438	Nails, Wire, 8d Common	7.815
Sheets, H.R., Carbon	4.870	Wire, Barbed (80-rod spool)	7.097
Sheets, C.R., Carbon	5.864	Woven Wire Fence (20-rod roll)	16.815
Sheets, Galvanized	7.220		
Sheets, C.R., Stainless, 302 (lb)	0.553		
Sheets, Electrical	$9.350		

‡Not available.

STEEL's FINISHED STEEL PRICE INDEX*

	Mar. 30 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 avg.=100)	194.53	194.53	194.53	189.74	156.13
Index in cents per lb	5.270	5.270	5.270	5.140	4.230

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$118.40	$118.40†	$117.82	$113.73	$93.18
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.47
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.97
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	37.41	37.75	37.33	24.50	28.75

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130. †Revised.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Mar. 30 1955	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.44
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.45
Bars, H.R., deld. Philadelphia	4.55	4.55	4.55	4.405	3.93
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	4.10-4.1
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.40
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.40
Shapes, deld. Philadelphia	4.53	4.53	4.53	4.38	3.42
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.50
Plates, Chicago	4.225	4.225	4.225	4.10	3.50
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.10	3.60
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.50
Plates, Claymont, Del.	4.225	4.225	4.225	4.10	3.60
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.35
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.35
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.30
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4.40
Strip, H.R., Pittsburgh	4.05	4.05	4.05	4.425	3.25
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45	4.15
Strip, C.R., Chicago	5.85	5.85	5.85	5.70	4.30
Strip, C.R., Detroit	5.90	5.90	5.90	5.45-6.05	4.35-.4
Wire, Basic, Pittsburgh	5.75	5.75	5.75	5.525	4.50
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.55	5.30
Tin Plate (1.50 lb), box, Pitts.	$9.05	$9.05	$9.05	$8.95	$7.50
SEMIFINISHED STEEL					
Billets, Forging, Pitts. (NT)	$78.00	$78.00	$78.00	$75.50	$63.00
Wire Rods, 7/32-5/8" Pitts.	4.675	4.675	4.675	4.525	3.85
PIG IRON, Gross Ton					
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	59.66	59.66	59.66	59.66	49.44
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, deld. Phila.	55.16	55.16	55.16	60.16	49.94
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	42.38
No. 2 Fdry (Birm.) deld. Cin.	60.58	60.58	60.58	60.43	49.08
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne.	190.00†	190.00†	190.00†	200.00†	175.00

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$38.50	$38.50	$38.50	$25.50	$32.00
No. 1 Heavy Melt, E. Pa.	37.75	38.75	39.50	22.00	25.25
No. 1 Heavy Melt, Chicago	36.00	36.00	34.00	26.00	29.00
No. 1 Heavy Melt, Valley	37.50	37.50	37.50	23.50	32.75
No. 1 Heavy Melt, Cleve.	35.00	35.00	34.00	34.00	29.25
No. 1 Heavy Melt, Buffalo	32.50	32.50	32.50	24.00	28.25
Rails, Rerolling, Chicago	50.50	50.50	49.50	34.50	45.50
No. 1 Cast, Chicago	41.50	40.00	40.00	36.00	42.50
COKE, Net Ton					
Beehive, Furn, Connlsvl.	$13.75	$13.75	$13.75	$14.75	$14.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	16.75	16.00
Oven, Fdry, Chicago	24.50	24.50	24.50	24.50	21.00

Daily Nonferrous Price Record

	Price Mar. 30	Last Change	Previous Price	Feb. Avg.	Jan. Avg.	Mar. 1954 Avg.
Copper	36.00	Mar. 29, 1955	33.00	33.000	30.180	29.865
Lead	14.80	Oct. 4, 1954	14.55	14.800	14.800	12.735
Zinc	11.50	Sept. 3, 1954	11.00	11.500	11.500	9.657
Tin	91.25	Mar. 29, 1955	91.25	90.908	87.280	92.518
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	23.20	Jan. 12, 1955	22.20	23.200	22.900	21.500
Magnesium	28.50	Mar. 21, 1955	27.00	27.000	27.000	27.000

Quotations in cents per pound based on COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size a refinery, unpacked; ALUMINUM, primary ingots, 99+%, deld.; MAGNESIUM, 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.** Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.** Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.** Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.** Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**

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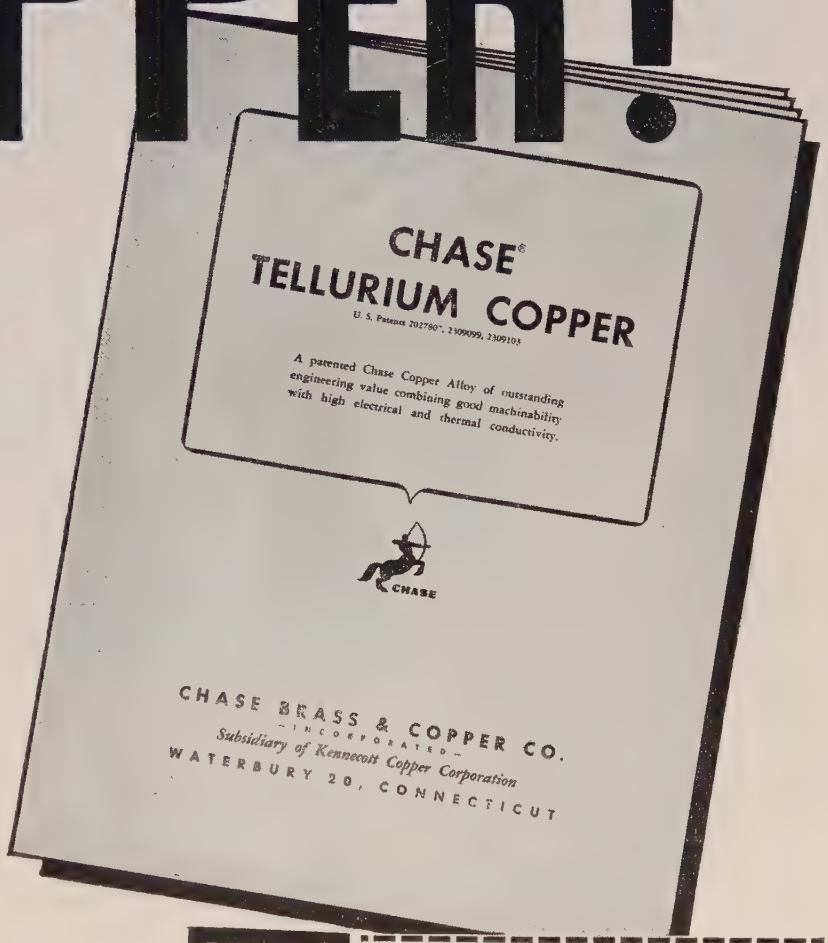
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Nonferrous Metals

Annual reports of nonferrous companies show profits up and sales down for 1954. Emphasis on economical operation, end of excess profits tax offset inventory adjustment

Nonferrous Metal Prices, Pages 130 & 131

PROFITS UP 3.7 PER CENT; sales down 5.1 per cent. That's the essence of the combined annual reports of the 23 nonferrous companies listed below.

These reports, collectively and individually, point out that 1954 wasn't such a bad year after all. In some ways, it was one of the best. Profit per sales dollar for the group was up 12.32 per cent over 1953, which many consider the best year on record. And none of the 23 reports, which were chosen on availability at presstime, shows a loss for 1954.

Value of Cost Cutting—Some of the improved profit position can be attributed to the death of the excess-profits tax. But it is obvious that management in nonferrous companies concentrated on cutting costs to contribute to their own economic well-being in 1954.

Copper Hike Follows Pattern

The pattern of last week's increase in copper to 36 cents a pound was almost identical with that of the January hike, except that Phelps Dodge led the way this time. The effects are likely to be the same, too. There is only so much copper to be bought, no matter what the price is. The industry still faces a shortage which must be dealt with by the government through diversion from stockpile shipments and quotas or embargoes on exports. Such action was anticipated at presstime.

Aluminum Gets Aid at Last

Aluminum finally got some action from the government last week, but many wonder if it's too little and too late. First relief was the release of 150 million lb from stockpile shipments for the current half. Second step was setting a quota of 9000 tons on exports of scrap for the second quarter and holding exports of primary and secondary ingots at the 1954 level. These actions do not represent a considerable cutback in existing levels of export operations, and do not result in much of an increase in the supply for domestic users.

Market Memos

- Another 3 million lb of nickel will be made available for civilian use in the second quarter, with prospects for similar action by the government in the third quarter.
- Don't be surprised if there is a price increase in lead soon. Such a rumor has been going around for some time, and it is becoming more persistent.
- The government is reviewing the stockpile program with an eye on the desirability of piling up the supply of one critical material when other materials needed in the end product are not available.

Nonferrous Industry Reports: Profits Up, Sales Down in 1954

COMPANY	1954 Net Sales	1954 Net Profit	1954 Profit Per Sales Dollar (Cents)	1953 Net Sales	1953 Net Profit	1953 Profit Per Sales Dollar (Cents)
Aluminum Co. of America	$708,344,047	$46,471,470	6.56	$707,538,107	$48,848,094	6.90
American Smelting & Refining Co.	466,774,787	21,477,610	4.60	463,858,943	19,111,632	4.12
Beryllium Corp.	7,381,908	473,038	6.41	9,112,343	591,191	6.49
Bridgeport Brass Co.	105,987,289	5,105,198	4.82	142,659,388	5,325,834	3.73
Calumet & Hecla Inc.	61,578,596	2,238,106	3.63	65,018,793	3,325,437	5.11
Consolidated Coppermines Corp.	9,045,843	2,342,537	25.90	11,650,337	2,873,340	24.66
Fansteel Metallurgical Corp.	22,244,572	913,817	4.11	26,415,015	1,335,219	5.05
General Bronze Corp.	29,730,809	1,239,789	4.17	25,890,981	1,153,329	4.45
General Cable Corp.	97,424,642	5,219,933	5.36	116,518,859	5,095,416	4.37
Handy & Harman	65,766,026	623,738	0.95	84,872,402	1,032,161	1.22
International Nickel Corp.	352,273,825	65,295,186	18.54	338,579,995	53,694,526	15.86
Kennecott Copper Corp.	423,642,404	77,906,288	18.39	476,668,320	88,753,873	18.62
Magma Copper Co.	17,085,705	5,535,297	32.40	15,326,034	4,759,691	31.05
Metal & Thermit Corp.	22,099,745	1,639,124	7.42	25,975,477	1,471,797	5.67
Mueller Brass Co.	49,395,600	2,304,214	4.66	60,671,041	2,924,433	4.82
National Lead Co.	419,333,961	36,618,651	8.73	436,050,592	30,848,928	7.07
Phelps Dodge Corp.	277,063,666	42,547,811	15.36	292,520,375	40,776,529	13.94
Reynolds Metals Co.	306,778,822	20,280,908	6.61	287,892,987	18,320,975	6.36
Revere Copper & Brass Inc.	193,272,861	10,276,994	5.32	250,616,942	10,380,167	4.14
St. Joseph Lead Co.	95,003,072	7,523,503	7.92	88,002,426	6,300,342	7.16
Scovill Mfg. Co.	110,975,919	4,404,758	3.97	125,489,218	3,706,066	2.95
Titan Metal Mfg. Co.	28,336,551	1,626,763	5.74	39,988,530	1,712,371	4.28
United States Smelting, Refining & Mining Co.	34,842,168	1,935,300	5.55	34,014,543	—836,610	—2.46
TOTALS	$3,914,382,818	$364,000,033	9.30	$4,125,331,648	$341,504,141	8.28

Newport Steel

EXPERIENCE, YOUTH, NEW FACILITIES GIVE YOU BETTER STEEL

Basic ingredients of the best steel are experience and skill, modern facilities and youthful drive. At this mill 25% of the personnel have served 25 years or more. And young men devoted to the improvement of quality and service are increasingly attracted by Newport's many new facilities, the latest of which is a reversing cold mill. Combine these assets with freight-saving location in the area of greatest industrial growth, and you have a most logical source indeed for your steel requirements. Check this list of products, then check with Newport for what you need.

ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

PRODUCTS OF NEWPORT STEEL

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Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Hot-Rolled Sheets
Hot-Rolled Pickled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Electrical Sheets
Alloy Sheets and Plates
Electric Weld Line Pipe
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts

Newport Steel

CORPORATION

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Nonferrous Metals

Cents per pound, carlots, except as otherwise noted

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 23.20, pigs 21.50, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 25.00; No. 43, 5% Si, 24.80; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 26.20; No. 195, 4.5% Cu, 0.8% Si, 25.50; No. 214, 3.8% Mg, 26.20; No. 356, 7% Si, 0.3% Mg, 24.90.

Antimony: R.M.M. brand, 99.5%, 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.00-28.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $118.30 per lb, nom.

Copper: Electrolytic 36.00 deld. Conn. Valley; 36.00 deld. Midwest; Lake 36.00 deld; Fire refined 35.75 deld.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$120 nom. per troy oz.

Lead: Common 14.80, chemical 14.90, corroding 14.90, St. Louis; N. Y. basis, add 0.20.

Lithium: 98%, $10-$14 per lb, depending on quantity.

Magnesium: 99.8%, self-palletizing pig 28.50; notched ingot 29.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks 1.3 in. diameter, 47.50, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 34.00; alloy M 36.00, 10,000 lb or more, f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $320-$323, per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3-$3.25 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 64.50; 10-lb pigs, unpacked 67.65; "XX" nickel shot 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $120-$130, nom., per troy oz.

Palladium: $17-$20 per troy oz.

Platinum: $76-$80 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$56 per troy oz.

Selenium: 99.5%, $6-$7.25 per lb.

Silver: Open market, 88.50 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Sheet, rod $68.70 per lb; powder $40.20 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 91.50.

Titanium: Sponge, 99.3+ %, grade A-1 ductile (0.3% Fe max) $4.50, grade A-2 (0.5% Fe max) $4 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots $4.35-$4.40 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99+ % hydrogen reduced, $4.65. Treated ingots $6.70.

Zinc: Prime Western 11.50, brass special 11.75, intermediate 12.00, E. St. Louis, freight allowed over 0.50 per pound. High grade 12.85, special high grade 13.00, die casting alloy ingot 15.50, deld.

Zirconium: Sponge $10 per lb; powder electronics grade $15, flash grade $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloy 31.00-31.75; No. 12 foundry alloy (No. 2 grade) 29.25-30.50; 5% silicon alloy, 0.60 Cu max, 31.25-32.25; 13 alloy; 0.60 Cu max, 31.25-32.25; 195 alloy 30.75-33.00; 108 alloy 30.00-31.00; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 30.75-32.50; grade 2, 30.00-31.50; grade 3, 29.25-30.50; grade 4, 28.75-29.50.

Brass Ingot: Red brass No. 115, 37.00; tin bronze No. 225, 48.50; No. 245, 42.25; high-leaded tin bronze No. 305, 41.00; No. 1 yellow, No. 405, 32.25; manganese bronze No. 421, 34.75.

Magnesium Alloy Ingot: AZ63A, 31.00; AZ91B, 26.00; AZ91B, 31.00; AZ92A, 31.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.71; rod, bar, wire, $1.68.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 38.35-42.45; 30,000-lb lots, 38.48-42.58; l.c.l., 38.98-43.08. Weatherproof, 100,000 lb, 38.53-41.60; 30,000 lb 38.78-41.85; l.c.l. 39.28-42.35. Magnet wire deld., 15,000 lb or more 44.99-49.31; l.c.l. 45.74-50.06.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more $20 per cwt; pipe, full coils $20 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forging billets, $9; hot-rolled and forged bars, $9.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets 23.00, ribbon zinc in coils, 19.00-20.50; plates 18.00-22.25.

ZIRCONIUM

Plate $27; H.R. strip $23; C.R. strip $35; forged or H.R. bars $27; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks	...	65	...

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	63.5	62.0	...	...
0.156-0.172	53.9	52.3	...	...
0.188	53.9	52.3	...	66.8
0.219-0.234	51.1	49.5	...	...
0.250-0.281	51.1	49.5	...	63.7
0.313	51.1	49.5	...	60.8
Cold-finished				
0.375-0.547	49.9	47.5	59.8	57.2
0.563-0.688	49.9	47.5	56.9	53.7
0.750-1.000	48.7	46.3	52.1	50.6
1.063	48.7	46.3	...	48.9
1.125-1.500	46.9	44.6	50.4	48.9
Rolled				
1.563	45.7	43.4	...	...
1.625-2.000	45.1	42.8	...	47.2
2.125-2.500	44.0	41.7	...	...
2.563-3.375	42.7	40.5	...	...

ALUMINUM

Sheets and Circles: 1100 and 3003 mill finish (30,000 lb base; freight allowed over 499 lb)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	35.9	40.4	...	...
0.135-0.096	36.4	41.3	...	...
0.095-0.077	37.1	42.3	34.6	39.6
0.076-0.061	37.7	43.2	34.8	39.8
0.060-0.048	38.2	43.6	35.1	40.2
0.047-0.038	38.7	44.5	35.6	40.6
0.037-0.030	39.1	45.0	36.0	41.3
0.029-0.024	39.7	45.5	36.3	41.8
0.023-0.019	40.4	46.9	37.1	42.6
0.018-0.017	41.2	...	37.7	43.6
0.016-0.015	42.1	...	38.5	44.7
0.014	43.1	...	39.5	46.0
0.013-0.012	44.3	...	40.2	47.0
0.011	45.3	...	41.4	48.6
0.010-0.0095	46.5	...	42.5	50.2
0.009-0.0085	47.8	...	44.0	52.3
0.008-0.0075	49.4	...	45.2	54.1
0.007	50.9	...	46.7	56.4
0.006	52.5	...	48.1	61.4

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam, 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	34.6	38.8
5050-F	35.7	39.9
3004-F	36.7	41.6
5052-F	38.4	43.4
6061-T6	39.6	44.0
2024-T4*	41.8	47.9
7075-T6*	49.6	56.2

*24-48 in. widths or diam, 72-180 in. lengths.

ALUMINUM

Forging Stock: Round, Class 1, 47.80-37.30, in specific lengths 36-144 in., diameters 0.375-8 in. Rectangles and squares, Class 1, 53.60-41.00 in random lengths, 0.375-4 in. thick, widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20-ft lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$16.10	2	$ 49.55
1	25.35	4	136.65
1¼	34.30	6	244.90
1½	41.00	8	368.50

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 97.00, 0.064-in. 76.00, 0.125-in. 61.50, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled AZ31, 53.00, 20,000 lb or more, 0.250-in. and over widths to 48 in., lengths to 144 in.; raised pattern floor plate, 59.00, 20,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31. Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings 17.50-18.50; old sheet 14.00-16.00; borings and turnings 9.50-10.50; crankcases 14.00-16.00; industrial castings 14.00-16.00.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	51.76b	49.36	....	51.82	29.000	29.000	28.250
Yellow Brass	44.27	44.21	44.81	47.18	21.875	21.625	20.125
Red Brass, 85%	48.44	48.38	48.98	51.25	25.500	25.250	24.750
Low Brass, 80%	47.35	47.29	47.89	50.16	24.625	24.375	23.875
Naval Brass	48.18	42.49	55.24	51.34	20.250	20.000	19.500
Com. Bronze, 90%	50.08	50.02	50.62	52.64	26.625	26.375	25.875
Nickel Silver, 10%	58.25	62.25g	60.58	....	26.000	25.750	13.000
Phos. Bronze, A, 5%	70.12	70.62	70.62	71.80	29.375	29.125	28.125
Silicon Bronze	55.94	55.13	55.98	57.86e	28.000	27.750	27.000
Manganese Bronze	51.92	46.02	56.46	....	20.375	20.125	19.500
Muntz Metal	46.34	42.15	....	....	20.625	20.375	19.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

These prices are based on copper at 33 cents a lb. New prices based on copper at 36 cents a lb will appear as soon as they are available.

Copper and Brass: Heavy copper and wire No. 32.00-32.50; No. 2 copper 30.00-31.00; light copper 27.50-28.00; No. 1 composition red brass 25.50-26.00; No. 1 composition turnings 23.50-24.00; yellow brass turnings 16.00-16.50; new brass clippings 21.50-22.00; No. 1 brass rod turnings 19.50-20.00; light brass 17.00-17.50; heavy yellow brass 18.00-18.50; new brass rod ends 18.50-19.50; auto radiators, unsweated 20.00-20.50; cocks and faucets 21.00-21.50; brass pipe 21.00-21.50.

Lead: Heavy 11.50-11.75; battery plate 6.00-6.75; linotype and stereotype 13.50-14.50; electrotype 12.00-12.50; mixed babbitt 12.00-14.00.

Magnesium: Clippings 18.50-19.50; clean castings 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings 28.00-36.00; old sheet 26.00-32.00; turnings 21.00; rods 28.00-36.00.

Nickel: Sheets and clips 57.00-70.00; rolled anodes 57.00-70.00; turnings 40.00-55.00; rod ends 57.00-70.00.

Tin: No. 1 pewter 50.00-55.00; block tin pipe 70.00-75.00; No. 1 babbitt 45.00-48.00.

Zinc: Old zinc 4.75-5.50; new die cast scrap 4.75-5.00; old die cast scrap 3.25-3.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings 19.00-21.00; 3003 clippings 19.00-21.00; 6151 clippings 1900-21.00; 5052 clippings 19.00-21.00; 2014 clippings 18.50-20.50; 2017 clippings 18.50-20.50; 2024 clippings 18.50-20.50; mixed clippings 18.00-20.00; old sheet 17.50-18.50; old cast 17.50-18.50; clean old cable (free of steel) 20.00-21.00; borings and turnings 17.50-19.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 45.00; light scrap 40.00.

Copper, Brass: No. 1 copper 36.00; No. 2 copper 34.50; light copper 32.75; refinery brass (60% copper) per dry copper content 31.00-31.50.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 34.00-35.00; No. 2 copper 32.00; light copper 30.25; No. 1 composition borings 27.00-28.00; No. 1 composition solids 27.50-28.00; heavy yellow brass solids 21.50-22.00; yellow brass turnings 21.00; radiators 22.00-22.50.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 48.42, oval 47.92, 5000-10,000 lb; electrodeposited 42.78, 2000-5000 lb lots; cast 45.04, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb $1.015; 100-499 lb 99.50; 500-4999 lb 95.50; 5000-29,999 lb 93.50; 30,000 lb 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb $1.095; 200-499 lb $1.08; 500-999 lb $1.075; 1000 lb or more $1.07.

Zinc: Bar 20.00, bar or flat top 19.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100-lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: 100 lb 71.80; 200 lb 71.05; 300 lb 70.80; 400-900 lb 70.05; 1000 lb and over 68.05, effective Feb. 11, 1955.

Copper Sulphate: Crystal, 100 lb 20.50; 200 lb 17.50; 300 lb 16.50; 400 lb 16.00; 500-1900 lb 14.50; 2000 to 10,000 lb 14.25; 10,000 lb and up 14.15. Powder, add 0.5 to above prices. Effective Jan. 31, 1955.

Nickel Chloride: 100 lb 46.50; 200 lb 44.50; 300 lb 43.50; 400-4900 lb 41.50; 5000-9900 lb 39.50; 10,000 lb and over 38.50. All prices eastern delivery, effective Jan. 1, 1955.

Nickel Sulphate: 100 lb 38.25; 200 lb 36.25; 300 lb 35.25; 400-4900 lb 33.25; 5000-35,900 lb 31.25; 36,000 lb 30.25. All prices eastern delivery, effective Jan. 1, 1955.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 70.10; 100-600 lb 55.90; 700-1900 lb 53.40; 2000-9900 lb 51.70; 10,000 lb or more 50.60.

Stannous Chloride (Anhydrous): Less than 50 lb $1.558; 50 lb $1.218, 100-300 lb $1.068, 400-900 lb $1.043; 1000-1900 lb $1.019; 2000-4900 lb 98.20; 5000-19,900 lb 92.10, 20,000 lb and over 86.00.

Stannous Sulphate: Less than 5 lb $1.258; 50 lb 95.80; 100-1900 lb 93.80; 2000 lb and over 91.80.

Zinc Cyanide: Under 1000 lb 54.30; 1000 lb and over 52.30.

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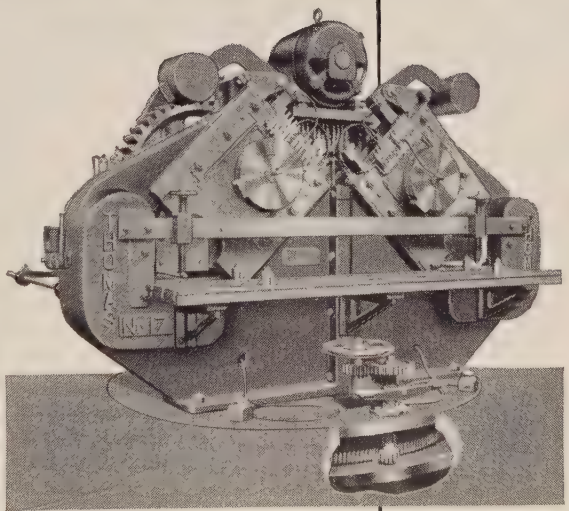

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52

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company. Key on page 133. Key to footnotes, page 135.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$61.50

INGOTS, Alloy (NT)

Detroit R7 .....$65.00
Houston S5 .....70.00
Midland,Pa. C18 .....65.00
Munhall,Pa. U5 .....65.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)

Aliquippa,Pa. J5 ....$64.00
Bessemer,Pa. U5 .....64.00
Bridgeport,Conn. N19 ..69.00
Buffalo R2 .....64.00
Clairton,Pa. U5 .....64.00
Ensley,Ala. T2 .....64.00
Fairfield,Ala. T2 ....64.00
Fontana,Calif. K1 ....72.00
Gary,Ind. U5 .....64.00
Johnstown,Pa. B2 ....64.00
Lackawanna,N.Y. B2. .64.00
Munhall,Pa. U5 .....64.00
Pittsburgh J5 .....64.00
So.Chicago,Ill. R2, U5. .64.00
So.Duquesne,Pa. U5 ..64.00
Youngstown R2 .....64.00

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$78.00
Bessemer,Pa. U5 .....78.00
Bridgeport,Conn. N19 ..83.00
Buffalo R2 .....78.00
Canton,O. R2 .....80.00
Clairton,Pa. U5 .....78.00
Conshohocken,Pa. A3 ..83.00
Ensley,Ala. T2 .....78.00
Fairfield,Ala. T2 .....78.00
Fontana,Calif. K1 ....86.00
Gary,Ind. U5 .....78.00
Geneva,Utah C11 .....78.00
Houston S5 .....83.00
Johnstown,Pa. B2 .....78.00
Lackawanna,N.Y. B2 ..78.00
LosAngeles B3 .....87.50
Midland,Pa. C18 .....78.00
Munhall,Pa. U5 .....78.00
Pittsburgh J5 .....78.00
Seattle B3 .....91.50
So.Chicago R2,U5,W14 .78.00
So.Duquesne,Pa. U5 ..78.00
So.SanFrancisco B3 ...87.50

Alloy, Forging (NT)

Bethlehem,Pa. B2 ....$86.00
Buffalo R2 .....86.00
Canton,O. R2, T7 ....86.00
Conshohocken,Pa. A3 ..93.00
Detroit R7 .....86.00
Fontana,Calif. K1 ....105.00
Gary,Ind. U5 .....86.00
Houston S5 .....91.00
Ind.Harbor,Ind. Y1 ...86.00
Johnstown,Pa. B2 ....86.00
Lackawanna,N.Y. B2 ..86.00
LosAngeles B3 .....106.00
Massillon,O. R2 .....86.00
Midland,Pa. C18 .....86.00
Munhall,Pa. U5 .....86.00
So.Chicago, R2,U5,W14.86.00
So.Duquesne,Pa. U5 ...86.00
Struthers,O. Y1 .....86.00
Warren,O. C17 .....86.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$96.50
Canton,O. R2 .....96.50
Cleveland R2 .....96.50
Gary,Ind. U5 .....96.50
So.Chicago R2, W14 ..96.50
So.Duquesne,Pa. U5 ...96.50

SKELP

Aliquippa,Pa. J5 .....4.00
Fontana,Calif. K1 ....4.775
Munhall,Pa. U5 .....3.90
SparrowsPoint,Md. B2..3.90
Warren,O. R2 .....3.90
Youngstown R2, U5 ....3.90

WIRE RODS

AlabamaCity,Ala. R2 ..4.675
Aliquippa,Pa. J5 .....4.675
Alton,Ill. L1 .....4.85
Buffalo B11, W12 ....4.675
Cleveland A7 .....4.675
Donora,Pa. A7 .....4.675
Fairfield,Ala. T2 .....4.675
Fontana,Calif. K1 ....5.475
Houston S5 .....4.925
IndianaHarbor,Ind. Y1 .4.675
Johnstown,Pa. B2 ....4.675
Joliet,Ill. A7 .....4.675
KansasCity,Mo. S5 ....4.925
Kokomo,Ind. C16 .....4.775
LosAngeles B3 .....5.475
Minnequa,Colo. C10 ..4.925
Monessen,Pa. P7 .....4.675
No.Tonawanda,N.Y.B11 4.675
Pittsburg,Calif. C11 ...5.325
Portsmouth P12 .....4.675
Roebling,N.J. R5 ....4.775
So.Chicago,Ill. R2 ....4.675
SparrowsPoint,Md. B2..4.775
Sterling,Ill.(1) N15 ...4.675
Sterling,Ill. N15 .....4.775
Struthers,O. Y1 .....4.675
Torrance,Calif. C11 ....5.475
Worcester,Mass. A7 ..4.975

STRUCTURALS

Carbon Steel Stand. Shapes

Ala.City,Ala. R2 .....4.25
Aliquippa,Pa. J5 .....4.25
Bessemer,Ala. T2 .....4.25
Bethlehem,Pa. B2 .....4.30
Birmingham C15 .....4.25
Clairton,Pa. U5 .....4.25
Fairfield,Ala. T2 .....4.25
Fontana,Calif. K1 ....4.90
Gary,Ind. U5 .....4.25
Geneva,Utah C11 .....4.25
Houston S5 .....4.30
Ind.Harbor,Ind. I-2 ....4.25
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....4.95
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....4.25
Niles,Calif. P1 .....4.90
Portland,Oreg. O4 .....5.00
Phoenixville,Pa. 4.20
Seattle B3 .....5.00
So.Chicago U5, W14 ....4.25
So.SanFrancisco B3 ...4.90
Torrance,Calif. C11 ....4.95
Weirton,W.Va. W6 ....4.25

Wide Flange

Bethlehem,Pa. B2 .....4.30
Clairton,Pa. U5 .....4.25
Fontana,Calif. K1 ....5.25
Lackawanna,N.Y. B2 ..4.30
Munhall,Pa. U5 .....4.25
Phoenixville,Pa. P4 ....4.30
So.Chicago,Ill. U5 .....4.25

Alloy Stand. Shapes

Clairton,Pa. U5 .....5.20
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.20
Houston S5 .....5.25
Munhall,Pa. U5 .....5.20
So.Chicago,Ill. U5 .....5.20

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5 .....6.40
Bessemer,Ala. T2 .....6.40
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.40
Fairfield,Ala. T2 .....6.40
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 .....6.40
STEEL 5½on6 3-24 RAY
Geneva,Utah C11 .....6.40
Houston S5 .....6.45
Ind.Harbor,Ind. I-2, Y1.6.40
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....6.45
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.10
Munhall,Pa. U5 .....6.40
Seattle B3 .....7.15
So.Chicago,Ill. U5, W14.6.40
So.SanFrancisco B3 ....7.05
Struthers,O. Y1 .....6.40

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
Munhall,Pa. U5 .....6.40
So.Chicago,Ill. U5 ....6.40

PILING

BEARING PILES

Munhall,Pa. U5 .....4.25
So.Chicago,Ill. U5 .....4.25

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ...5.075
Lackawanna,N.Y. B2 ..5.075
Munhall,Pa. U5 .....5.075
So.Chicago,Ill. U5 ....5.075

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 .....4.225
Aliquippa,Pa. J5 .....4.225
Ashland,Ky.(15) A10 ..4.225
Bessemer,Ala. T2 ....4.225
Bridgeport,Conn. N19 ..4.475
Buffalo R2 .....4.225
Clairton,Pa. U5 .....4.225
Claymont,Del. C22 ....4.225
Cleveland J5, R2 ....4.225
Coatesville,Pa. L7 ....4.225
Conshohocken,Pa. A3 ..4.225
Ecorse,Mich. G5 .....4.325
Fairfield,Ala. T2 .....4.225
Fontana,Calif.(30) K1..4.875
Gary,Ind. U5 .....4.225
Geneva,Utah. C11 ....4.225
GraniteCity,Ill. G4 ....4.425
Harrisburg,Pa. C5 ....4.225
Houston S5 .....4.275
Ind.Harbor,Ind. I-2, Y1.4.225
Johnstown,Pa. B2 ....4.225
Lackawanna,N.Y. B2 ..4.225
LoneStar,Tex. L6 .....4.55
Mansfield,O. E6 .....4.225
Minnequa,Colo. C10 ..5.075
Munhall,Pa. U5 .....4.225
Newport,Ky. N9 .....4.225
Pittsburgh J5 .....4.225
Riverdale,Ill. A1 .....4.225
Seattle B3 .....5.125
Sharon,Pa. S3 .....4.225
So.Chicago R2, U5, W14 4.225
SparrowsPoint,Md. B2..4.225
Steubenville,O. W10 ..4.225
Warren,O. R2 .....4.225
Weirton,W.Va. W6 ....4.225
Youngstown R2,U5,Y1..4.225

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 ....6.025
Geneva,Utah C11 ....5.375

PLATES, Wrought Iron

Economy,Pa. B14 .....9.80

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland J5, R2 ....6.45
Coatesville,Pa. L7 ....6.45
Conshohocken,Pa. A3 ..6.45
Ecorse,Mich. G5 .....6.55
Fairfield,Ala. T2 .....6.45
Fontana,Calif. (30) K1..7.15
Gary,Ind. U5 .....6.45
Geneva,Utah C11 .....6.45
Houston S5 .....6.50
Ind.Harbor,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.35
Munhall,Pa. U5 .....6.45
Pittsburgh J5 .....6.45
Seattle B3 .....7.35
Sharon,Pa. S3 .....6.45
So.Chicago,Ill. U5, W14.6.45
SparrowsPoint,Md. B2 ..6.45
Youngstown U5, Y1 ....6.45

PLATES, Alloy

Claymont,Del. C22 ....5.80
Coatesville,Pa. L7 .....5.80
Fontana,Calif. K1 ....6.45
Gary,Ind. U5 .....5.80
Houston S5 .....5.85
Ind.Harbor,Ind. Y1 ....5.80
Johnstown,Pa. B2 .....5.80
Munhall,Pa. U5 .....5.80
Newport,Ky. N9 .....5.80
Seattle B3 .....6.70
Sharon,Pa. S3 .....5.80
So.Chicago,Ill. U5, W14.5.80
SparrowsPoint,Md. B2..5.80
Youngstown Y1 .....5.80

FLOOR PLATES

Cleveland J5 .....5.275
Conshohocken,Pa. A3 ..5.275
Harrisburg,Pa. C5 ....5.275
Ind.Harbor,Ind. I-2 ....5.275
Munhall,Pa. U5 .....5.275
So.Chicago,Ill. U5 ....5.275

PLATES, Ingot Iron

Ashland c.l. (15) A10..4.475
Ashland l.c.l. (15) A10.4.975
Cleveland c.l. R2 .....4.825
Warren,O. c.l. R2 ....4.825

BARS

BAR, Hot-Rolled Carbon

Ala.City,Ala. R2 .....4.30
Aliquippa,Pa. J5 .....4.30
Alton,Ill. L1 .....4.50
Atlanta A11 .....4.50
Bessemer, Ala. T2 .....4.30
Birmingham C15 .....4.30
Bridgeport,Conn. N19 ...4.55
Buffalo R2 .....4.30
Canton,O. R2 .....4.40
Clairton,Pa. U5 .....4.30
Cleveland R2 .....4.30
Ecorse,Mich. G5 .....4.40
Emeryville,Calif. J7 ....5.05
Fairfield,Ala. T2 .....4.30
FairlessHills,Pa. U5 ....4.45
Fontana,Calif. K1 .....5.00
Gary,Ind. U5 .....4.30
Houston S5 .....4.55
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.00
Massillon,O. R2 .....4.40
Midland,Pa. C18 .....4.30
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....5.00
N.Tonawanda,N.Y. B11..4.30
Pittsburg,Calif. C11.....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
Seattle B3, N14, P23 ...5.05
So.Chicago, R2,U5,W14..4.30
So.Duquesne,Pa. U5 ....4.30
So.SanFran.,Calif. B3 ..5.05
Sterling,Ill.(1) N15 .....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Warren,O. R2 .....4.30
Weirton,W.Va. W6 .....4.30
Youngstown R2, U5 ....4.30

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 .....5.075
Bridgeport,Conn. N19 ..5.225
Buffalo R2 .....5.075
Canton,O. R2, T7 .....5.075
Clairton,Pa. U5 .....5.075
Detroit R7 .....5.075
Ecorse,Mich. G5 .....5.175
Fontana,Calif. K1 ....6.125
FairlessHills,Pa. U5 ...5.225
Gary,Ind. U5 .....5.075
Houston S5 .....5.325
Ind.Harbor,Ind. I-2, Y1.5.075
Johnstown,Pa. B2 .....5.075
KansasCity,Mo. S5 .....5.325
Lackawanna,N.Y. B2 ..5.075
LosAngeles B3 .....6.125
Massillon,O. R2 .....5.075
Midland,Pa. C18 .....5.075
So.Chicago R2,U5,W14..5.075
So.Duquesne,Pa. U5 ...5.075
Struthers,O. Y1 .....5.075
Warren,O. C17 .....5.075
Youngstown U5 .....5.075

BARS, H.R. Leaded Alloy

Warren,O. C17 .....5.825

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland R2 .....6.45
Ecorse,Mich. G5 .....6.55
Fairfield,Ala. T2 .....6.45
Fontana,Calif. K1 .....7.70
Gary,Ind. U5 .....6.45
Houston S5 .....6.70
Ind.Harb.,Ind. I-2, Y1...6.45
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 .....6.70
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.15
Pittsburgh J5 .....6.45
Seattle B3 .....7.20
So.Chicago W14 .....6.45
So.Duquesne,Pa. U5 ....6.45
So.SanFrancisco B3 ....7.20
Struthers,O. Y1 .....6.45
Warren,O. R2 .....6.45
Youngstown U5 .....6.45

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 .....4.45

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....4.30
Atlanta A11 .....4.50
Fontana,Calif. K1 .....5.00
Niles,Calif. P1 .....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
SanFrancisco S7 .....4.70

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Houston S5 .....5.45
KansasCity,Mo. S5 .....5.45
Youngstown U5 .....5.20

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12, R2.5.40
Buffalo B5 .....5.45
Camden,N.J. P13 .....5.85
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7, C20 .....5.40
Detroit R7 .....5.40
Detroit B5, P17 .....5.60
Donora,Pa. A7 .....5.40
Elyria,O. W8 .....5.40
FranklinPark,Ill. N5 ...5.40
Gary,Ind. R2 .....5.40
GreenBay,Wis. F7 .....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn. R2 .....5.90
Harvey,Ill. B5 .....5.40
LosAngeles R2, S30 ....6.85
Mansfield,Mass. B5 ....5.95
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.85
NewCastle,Pa.(17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P5 ....5.85
Putnam,Conn. W18 .....5.95
Readville,Mass. C14 ....5.95
So.Chicago,Ill. W14 ....5.40
SpringCity,Pa. K3 .....5.85
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ...5.85
Youngstown F3, Y1 ....5.40

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19..4.65

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....6.625
BeaverFalls,Pa. M12,R2 6.625
Bethlehem,Pa. B2 .....6.625
Buffalo B5 .....6.625
Camden,N.J. P13 .....6.80
Canton,O. T7 .....6.625
Carnegie,Pa. C12 .....6.625
Chicago W18 .....6.625
Cleveland A7, C20 .....6.625
Detroit R7 .....6.625
Detroit B5, P17 .....6.825
Donora,Pa. A7 .....6.625
Elyria,O. W8 .....6.625
Gary,Ind. R2 .....6.625
GreenBay,Wis. F7 .....6.625
Hammond,Ind. L2, M13.6.625
Hartford,Conn. R2 ....6.925
Harvey,Ill. B5 .....6.625
Lackawanna,N.Y. B2 ..6.625
LosAngeles S30 .....8.30
Mansfield,Mass. B5 ....6.925
Massillon,O. R2, R8 ....6.625
Midland,Pa. C18 .....6.625
Monaca,Pa. S17 .....6.625
Newark,N.J. W18 .....6.80
Plymouth,Mich. P5 ....6.825
So.Chicago W14 .....6.625
SpringCity,Pa. K3 .....6.80
Struthers,O. Y1 .....6.625
Warren,O. C17 .....6.625
Waukegan,Ill. A7 .....6.625
Worcester,Mass. A7 ....6.925
Youngstown F3, Y1 ....6.625

BARS, C.F. Leaded Alloy

Ambridge,Pa. W18 ....7.525
Camden,N.J. P13 .....7.70
Carnegie,Pa. C12 .....7.525
Chicago W18 .....7.525
Cleveland C20 .....7.525
Monaca,Pa. S17 .....7.525
Newark,N.J. W18 .....7.70
SpringCity,Pa. K3 .....7.70
Warren,O. C17 .....7.525

BARS, Reinforcing (To Fabricators)

Ala.City,Ala. R2 .....4.30
Atlanta A11 .....4.50
Birmingham C15 .....4.30
Buffalo R2 .....4.30
Cleveland R2 .....4.30
Emeryville,Calif. J7 ....5.05
Fairfield,Ala. T2 .....4.30
FairlessHills,Pa. U5 ....4.45
Fontana,Calif. K1 .....5.00
Ft.Worth,Tex.(42) T4 ..4.90
Gary,Ind. U5 .....4.30
Houston S5 .....4.55

Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.00
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....5.00
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
SandSprings,Okla. S5 ...4.80
Seattle B3, N14, P23 ...5.05
So.Chicago R2 .....4.30
So.Duquesne,Pa. U5 ....4.30
So.SanFrancisco B3 ....5.05
SparrowsPoint,Md. B2 ..4.30
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Youngstown R2, U5 ....4.30

BARS, Reinforcing
(Fabricated; to Consumers)

Johnstown,Pa. ¼-1" B2..5.70
KansasCity,Kans. S5 ...6.50
LosAngeles B3 .....5.95
Marion,O. P11 .....5.55
Pittsburgh J5, U8 .....5.72
Seattle B3, N14, P23 ...6.15
So.SanFrancisco B3 ....6.00
SparrowsPt. ½-1" B2 ..5.70
Williamsport,Pa. S19 ...5.60

RAIL STEEL BARS

Avis,Pa.(3) J8 .....4.25
ChicagoHts.(3) C2, I-2..4.20
ChicagoHts.(4) C2, I-2..4.30
Ft.Worth,Tex.(26) T4 ..4.75
Franklin,Pa.(3) F5 .....4.20
Franklin,Pa.(4) F5 .....4.30
Marion,O.(3) P11 .....4.20
Moline,Ill.(3) R2 .....4.30
Tonawanda(3) B12 .....4.15
Tonawanda(4) B12 .....4.30
Williamsport,Pa.(3) S19.4.30

BARS, Wrought Iron

Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.80
McK.Rks(S.R.) L5 ....10.85
McK.Rks.(D.R.) L5 ...14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel
(18 Gage and Heavier)

Ala.City,Ala. R2 .....4.05
Allenport,Pa. P7 .....4.05
Ashland,Ky.(8) A10 ....4.05
Cleveland J5, R2 .....4.05
Conshohocken,Pa. A3 ...4.10
Detroit(8) M1 .....4.15
Ecorse,Mich. G5 .....4.15
Fairfield,Ala. T2 .....4.05
FairlessHills,Pa. U5 ....4.10
Fontana,Calif. K1 .....4.825
Gary,Ind. U5 .....4.05
Geneva,Utah C11 .....4.15
GraniteCity,Ill. G4 .....4.25
Ind.Harbor,Ind. I-2, Y1.4.05
Irvin,Pa. U5 .....4.05
Kokomo,Ind. C16 .....4.15
Lackawanna,N.Y. B2 ...4.05
Mansfield,O. E6 (37) ...4.05
Mansfield,O. E6 (38) ...4.80
Munhall,Pa. U5 .....4.05
Newport,Ky. N9 .....4.05
Niles,O. N12 .....4.05
Pittsburg,Calif. C11 ....4.75
Pittsburgh J5 .....4.05
Portsmouth,O. P12 .....4.05
Riverdale,Ill. A1 .....4.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
SparrowsPoint,Md. B2 ..4.05
Steubenville,O. W10 ....4.05
Warren,O. R2 .....4.05
Weirton,W.Va. W6 .....4.05
Youngstown U5, Y1 ....4.05

SHEETS, H.R. (19 Ga. & lighter)

Ala.City,Ala. R2 .....5.35
Kokomo,Ind. C16 .....5.20
Niles,O. N12 .....4.95

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 .....5.80
Youngstown Y1 .....5.80

SHEETS, H.R. (14 Ga. & heavier)
High-Strength Low-Alloy

Cleveland J5, R2 .....6.10
Conshohocken,Pa. A3 ...6.15
Ecorse,Mich. G5 .....6.20
Fairfield,Ala. T2 .....6.10
FairlessHills,Pa. U5 ....6.15
Fontana,Calif. K1 .....6.875
Gary,Ind. U5 .....6.10
Ind.Harbor,Ind. I-2, Y1.6.10
Irvin,Pa. U5 .....6.10
Lackawanna(35) B2 ....6.10
Munhall,Pa. U5 .....6.10
Pittsburgh J5 .....6.10
Sharon,Pa. S3 .....6.10
So.Chicago,Ill. U5 .....6.10
SparrowsPoint(36) B2 ..6.10
Warren,O. R2 .....6.10
Weirton,W.Va. W6 .....6.10
Youngstown U5, Y1 ....6.10

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)

Ashland,Ky.(8) A10 ....4.30
Cleveland R2 .....4.65
Ind.Harbor,Ind. I-2 ....4.30
Warren,O. R2 .....4.65

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Allenport,Pa. P7 .....4.95
Cleveland J5, R2 .....4.95
Conshohocken,Pa. A3 ...5.00
Ecorse,Mich. G5 .....5.05
Fairfield,Ala. T2 .....4.95
FairlessHills,Pa. U5 ....5.00
Follansbee,W.Va. F4 ...4.95
Fontana,Calif. K1 .....6.05
Gary,Ind. U5 .....4.95
GraniteCity,Ill. G4 .....5.15
Ind.Harbor,Ind. I-2, Y1.4.95
Irvin,Pa. U5 .....4.95
Lackawanna,N.Y. B2 ...4.95
Middletown,O. A10 .....4.95
Newport,Ky. N9 .....4.95
Pittsburg,Calif. C11 ....5.90
Pittsburgh J5 .....4.95
Portsmouth,O. P12 .....4.95
SparrowsPoint,Md. B2 ..4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 .....4.95
Youngstown Y1 .....4.95

SHEETS, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5, R2 .....7.50
Ecorse,Mich. G5 .....7.60
FairlessHills,Pa. U5 ....7.55
Fontana,Calif. K1 .....8.55
Gary,Ind. U5 .....7.50
IndianaHarbor,Ind. Y1 ..7.50
Irvin,Pa. U5 .....7.50
Lackawanna(37) B2 ....7.50
Pittsburgh J5 .....7.50
SparrowsPoint(38) B2 ..7.50
Warren,O. R2 .....7.50
Weirton,W.Va. W6 .....7.50
Youngstown Y1 .....7.50

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....5.55
Middletown,O. A10 .....5.45
Warren,O. R2 .....5.55

SHEETS, Culvert (16 Ga.)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.50	....
Canton,O. R2	6.50	7.10
Fairfield T2	5.70	....
Gary,Ind. U5	5.70	5.95
Ind.Harbor I-2	5.70	5.95
Irvin,Pa. U5	5.70	....
Kokomo,Ind. C16	5.80	....
MartinsFry.,O. W10	5.70	....
Newport,Ky. N9	5.70	5.95
Pitts.,Calif. C11	6.45	....
SparrowsPt. B2	5.70	....

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 .....6.75
Gary,Ind. U5 .....5.95
MartinsFerry,O. W10 ...5.95

SHEETS, Galvanized Steel
Hot-Dipped

Ala.City,Ala. R2 .....5.45‡
Ashland,Ky. A10 .....5.45*
Butler,Pa. A10 .....5.45†
Canton,O. R2 .....5.45‡
Delphos,O. N16 .....6.10‡
Dover,O. R1 .....5.45‡
Fairfield,Ala. T2 .....5.45†
Gary,Ind. U5 .....5.45*
GraniteCity,Ill. G4 ....5.65‡
Ind.Harbor,Ind. I-2 ...5.45†
Irvin,Pa. U5 .....5.45†
Kokomo,Ind. C16 .....5.55‡
MartinsFerry,O. W10 ..5.45*
Middletown,O. A10 ....5.45†
Newport,Ky. N9 .....5.45†
Niles,O. N12 .....5.45‡
Pittsburg,Calif. C11 ...6.20*
SparrowsPt.,Md. B2 ...5.45‡
Weirton,W.Va. W6 ....5.45*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 .....6.325

SHEETS, Galvanized
High-Strength Low-Alloy

Irvin,Pa. U5 .....8.20
SparrowsPoint(39) B2 ..8.20

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.85
Irvin,Pa. U5 .....5.85
Kokomo,Ind. C16 .....6.20
Newport,Ky. N9 .....5.85
Niles,O. N12 .....5.85

SHEETS, Galvanized Ingot Iron

Ashland,Ky.(8) A10 ....5.70
Canton,O. R2 .....6.20

SHEETS, Galvanized
Ingot Iron
(Hot-dipped Continuous)

Ashland,Ky. A10 .....5.70
Butler,Pa. A10 .....5.70
Middletown,O. A10 .....5.70

SHEETS, Electrogalvanized

Cleveland(28) R2 .....6.30
Niles,O.(28) R2 .....6.30
Weirton,W.Va. W6 .....6.15

SHEETS, Aluminum Coated

Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ...5.375
Cleveland R2 .....5.375
Gary,Ind. U5 .....5.375
GraniteCity,Ill. G4 ....5.575
Ind.Harbor,Ind. I-2 ...5.375
Irvin,Pa. U5 .....5.375
Middletown,O. A10 ....5.375
Niles,O. N12 .....5.375
Youngstown Y1 .....5.375

BLUED STOCK, 29 Ga.

Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 .....6.60
Yorkville,O. W10 .....7.375

SHEETS, Long Terne Steel
(Commercial Quality)

BeechBottom,W.Va. W10 5.85
Gary,Ind. U5 .....5.85
Mansfield,O. E6 .....5.85
Middletown,O. A10 .....5.85
Niles,O. N12 .....5.85
Weirton,W.Va. W6 .....5.85

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .....6.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A6 American Shim Steel Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div. Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman & Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.High Carb. Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P23 Pacific Steel Rolling

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W.Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City, Ala.(27) R2 ...4.05
Allenport,Pa. P7 .....4.05
Alton,Ill. L1 .....4.225
Ashland,Ky.(8) A10 ....4.05
Atlanta A11 .....4.25
Bessemer,Ala. T2 .....4.05
Birmingham C15 .....4.05
Bridgeport,Conn. N19 ..4.35
Buffalo(27) R2 .....4.05
Conshohocken,Pa. A3 ..4.10
Detroit M1 .....4.15
Ecorse,Mich. G5 .....4.15
Fairfield,Ala. T2 .....4.05
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....4.05
Ind.Harbor,Ind. I-2, Y1.4.05
Johnstown,Pa.(25) B2...4.05
Lackaw'na,N.Y.(25) B2.4.05
LosAngeles(25) B3 ....4.80
Milton,Pa. M18 .....4.05
Minnequa,Colo. C10 .....5.15
N.Tonawanda,N.Y. B11..4.05
Pittsburg,Calif. C11 ....4.80
Portsmouth,O. P12 ....4.05
Riverdale,Ill. A1 .....4.05
SanFrancisco S7 .....5.00
Seattle(25) B3, P23 ....5.05
Seattle N14 .....5.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
So.SanFrancisco(25) B3.4.80
SparrowsPoint,Md. B2 ..4.05
Sterling(1) N15 .....4.05
Sterling,Ill. N15 .....4.15
Torrance,Calif. C11 ....4.80
Warren,O. R2 .....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5 .....4.05

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19 ...7.00
Carnegie,Pa. S18 .....6.70
Fontana,Calif. K1 .....8.10
Gary,Ind. U5 .....6.70
Ind.Harbor,Ind. Y1 ....6.70
LosAngeles B3 .....7.90
Newport,Ky. N9 .....6.70
Seattle P23 .....7.80
Sharon,Pa. S3 .....6.70
So.Chicago W14 .....6.70
Youngstown U5, Y1 ....6.70

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 .....6.15
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 .....6.25
Fairfield,Ala. T2 .....6.15
Fontana,Calif. K1 .....7.25
Gary,Ind. U5 .....6.15
Houston S5 .....6.40
Ind.Harbor,Ind. I-2, Y1.6.15
KansasCity,Mo. S5 ....6.40
Lackawanna,N.Y. B2 ..6.15
LosAngeles(25) B3 ....6.90
Seattle(25) B3, P23 ....7.15
Sharon,Pa. S3 .....6.15
So.SanFrancisco(25) B3.6.90
SparrowsPoint,Md. B2 ..6.15
Warren,O. R2 .....6.15
Weirton,W.Va. W6 ....6.15
Youngstown U5, Y1 ....6.15

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ....4.30
Warren,O. R2 .....4.65

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....5.75
Baltimore T6 .....5.75
Boston T6 .....6.30
Cleveland A7, J5 .....5.75
Conshohocken,Pa. A3 ..5.80
Dearborn,Mich. D3 ....5.85
Detroit D2, M1, P20 ....5.85
Dover,O. G6 .....5.75
Ecorse,Mich. G5 .....5.85
Follansbee,W.Va. F4 ..5.75
Fontana,Calif. K1 .....7.50
FranklinPark,Ill. T6 ....5.85
Ind.Harbor,Ind. I-2 ....5.85
Ind.Harbor,Ind. Y1 ....5.75
Indianapolis C8 .....5.90
LosAngeles C1 .....7.80
Middletown,O. A10 ....5.75
NewBedford,Mass. R10..6.20
NewBritain(10) S15 ....5.75
NewCastle,Pa. B4, E5 ..5.75
NewHaven,Conn. A7 ....6.50
NewHaven,Conn. D2 ....6.20
NewKensington,Pa. A6 ..5.75
Pawtucket,R.I. R3 ....6.40
Pawtucket,R.I. N8 ....6.30
Pittsburgh J5 .....5.75
Portsmouth,O. P12 .....5.75
Riverdale,Ill. A1 .....5.85
Rome,N.Y.(32) R6 ....5.75
Sharon,Pa. S3 .....5.75
SparrowsPt.,Md. B2 ....5.75
Trenton,N.J.(31) R5 ...7.30
Wallingford,Conn. W2 ..6.20
Warren,O. B9, R2, T5..5.75
Weirton,W.Va. W6 ....5.75
Worcester,Mass. A7 ....6.60
Youngstown C8, Y1 ....5.75

STRIP, Cold-Rolled Alloy

Boston T6 .....12.80
Carnegie,Pa. S18 .....12.45
Cleveland A7 .....12.45
Dover,O. G6 .....12.45
Fontana,Calif. K1 ....14.55
FranklinPark,Ill. T6 ..12.45
Harrison,N.J. C18 ....12.45
Pawtucket,R.I. N8 ....12.80
Sharon,Pa. S3 .....12.45
Worcester,Mass. A7 ....12.75
Youngstown C8 .....12.90

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7, J5 .....8.60
Dearborn,Mich. D3 ....8.70
Dover,O. G6 .....8.60
Ecorse,Mich. G5 .....8.70
Ind.Harbor,Ind. Y1 ....8.60
Lackawanna,N.Y. B2 ..8.425

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	5.75	8.35	9.30	11.45	14.15
Boston T6	6.30	8.35	9.30	11.45	14.15
Bristol,Conn. W1	...	...	9.30	11.45	....
Carnegie,Pa. S18	...	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland C7	...	8.05	9.00	11.15	13.85
Dearborn,Mich. D3	5.85	8.25	9.20	....	....
Detroit D2	5.85	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18	...	...	9.30	11.45	14.15
Indianapolis C8	6.00	8.20	9.00	11.15	13.85
NewBritain,Conn.(10) S15	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	11.15	....
NewCastle,Pa. E5	5.75	8.05	9.00	11.15	13.85
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewKensington,Pa. A6	5.75	8.05	9.00	11.15	....
NewYork W3	...	8.35	9.30	11.45	14.15
Pawtucket,R.I. N8	6.30	8.35	9.30	11.45	14.15
Riverdale,Ill. A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	5.75	8.05	9.00	10.95	13.25
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.45	14.15
Warren,O. T5	5.75	8.05	9.00	11.15	13.85
Weirton,W.Va. W6	5.75	8.05	9.00	11.15	13.85
Worcester,Mass. A7, T6	6.60	8.35	9.30	11.45	14.15
Youngstown C8	5.85	8.05	9.00	11.15	13.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.90	15.60	....
Buffalo W12	...	...	12.90	....	....
FranklinPark,Ill. T6	...	...	13.40	16.10	19.50
Harrison,N.J. C18	...	...	12.90	15.60	19.00
NewYork W3	...	...	12.90	15.60	19.00
Trenton,N.J. R5	...	...	12.90	15.60	19.00
Worcester,Mass. A7, T6	...	...	12.90	15.60	19.00
Worcester,Mass. W12	...	...	12.90	....	....
Youngstown C8	...	...	13.25	15.95	19.35

STRIP, Electrogalvanized

Cleveland A7 .....5.75*
Dover,O. G6 .....5.75*
Riverdale,Ill. A1 .....5.85*
Youngstown C8 .....5.75*
Warren,O. B9, T5 ....5.75*
Weirton,W.Va. W6 ....5.75*
Worcester,Mass. A7 ...6.60*

*Plus galvanizing extras.

Strip, Galvanized (Continuous)

Sharon,Pa. S3 .....6.15
Warren,O. B9 .....6.15

TIGHT COOPERAGE HOOP

Atlanta A11 .....4.775
Riverdale,Ill. A1 .....4.625
Sharon,Pa. S3 .....4.475
Youngstown U5 .....4.475

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom,W.Va. W10	....	....	9.10	10.10	11.00
Brackenridge,Pa. A4	....	....	9.10	10.10	11.00
Mansfield,O. E6	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	....	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	11.00
Zanesville,O. A10	....	8.50	9.10	10.10	11.00

C.R. COILS & CUT LENGTHS, (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
Brackenridge,Pa. A4	....	....	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425*	8.95*	9.55*	10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	....	9.25†	9.85†	10.85†	11.75†
Vandergrift,Pa. U5	8.225*	8.75*	9.35*	10.35*	11.25*
Warren,O. R2	8.225†	9.25	9.85	10.85	11.75
Zanesville,O. A10	....	9.25	9.85	10.85	11.75

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.95	12.50	13.00	14.00
Brackenridge,Pa. A4	11.95	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.95	12.50	13.00	14.00
Zanesville,O. A10	11.95§	12.50§	13.00§	14.00§

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.00	16.60	17.10	....
Butler,Pa. A10	....	....	16.60	17.10	....
Vandergrift,Pa. U5	14.00	15.00	16.60	17.10	12.70
Warren,O. R2	....	....	....	....	12.70‡

* Semiprocessed. † Fully processed only. ‡ Coils annealed; semiprocessed ½c lower. § Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.50	$7.75	$8.15
Fairfield,Ala. T2	7.60	7.85	8.25
FairlessHills,Pa. U5	7.60	7.85	8.25
Gary,Ind. U5	7.50	7.75	8.15
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	8.15
Irvin,Pa. U5	7.50	7.75	8.15
Niles,O. R2	7.50	7.75	8.15
Pittsburg,Calif. C11	8.25	8.50	8.90
SparrowsPoint,Md. B2	7.60	7.85	8.25
Weirton,W.Va. W6	7.50	7.75	8.15
Yorkville,O. W10	7.50	7.75	8.15
ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	6.175	....	....
Niles,O. R2	6.175	6.375	6.575

TINPLATE,American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.80	$9.05
Fairfield,Ala. T2	8.90	9.15
Fairless,Pa. U5	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind.Har.-I-2, Y1	8.80	9.05
Irvin,Pa. U5	8.80	9.05
Pitts.Cal. C11	9.55	9.80
Sp.Pt.,Md. B2	8.90	9.15
Warren,O. R2	8.80	9.05
Weirton,W.Va. W6	8.80	9.05
Yorkville,O. W10	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$6.60
Fairfield,Ala. T2 .....6.70
FairlessHills,Pa. U5 ....6.70
Gary,Ind. U5 .....6.60
GraniteCity,Ill. G4 ....6.70
Ind.Harbor,Ind. I-2, Y1.6.60
Irwin,Pa. U5 .....6.60
Niles,O. R2 .....6.60
Pittsburg,Calif. C11 ....7.35
SparrowsPoint,Md. B2...6.70
Warren,O. R2 .....6.60
Weirton,W.Va. W6 ....6.60
Yorkville,O. W10 .....6.60

HOLLOWARE ENAMELING Black Plate (29 Gage)

Follansbee,W.Va. F4 ...6.20
Gary,Ind. U5 .....6.20
GraniteCity,Ill. G4 .....6.30
Ind.Harbor,Ind. Y1 ....6.20
Irvin,Pa. U5 .....6.20
Yorkville,O. W10 .....6.20

MANUFACTURING TERNES (Special Coated; Base Box)

Gary,Ind. U5 .....$7.85
Irvin,Pa. U5 .....7.85
Yorkville,O. W10 .....7.85

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10 ....$8.75

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5 .....9.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ...5.75
Aliquippa,Pa. J5 .....5.75
Alton,Ill. L1 .....5.925
Atlanta A11 .....5.95
Bartonville,Ill. K4 .....5.85
Buffalo W12 .....5.75
Chicago W13 .....5.75
Cleveland A7, C20 .....5.75
Crawfordsville,Ind. M8..5.85
Donora,Pa. A7 .....5.75
Duluth,Minn. A7 .....5.75
Fairfield,Ala. T2 .....5.75
Fostoria,O.(24) S1 ....5.95
Houston S5 .....6.00
Jacksonville,Fla. M8 ....6.27
Johnstown,Pa. B2 .....5.75
Joliet,Ill. A7 .....5.75
KansasCity,Mo. S5 ....6.00
Kokomo,Ind. C16 .....5.85
LosAngeles B3 .....6.70
Minnequa,Colo. C10 ....6.00
Monessen,Pa. P7 .....5.75
Newark 6-8 ga. I-1 ....6.40
No.Tonawanda B11 ....5.75
Palmer,Mass. W12 .....6.05
Pittsburg,Calif. C11 ....6.70
Portsmouth,O. P12 ....5.75
Rankin,Pa. A7 .....5.75
So.Chicago,Ill. R2 .....5.75
So.SanFrancisco C10 ..6.70
SparrowsPoint,Md. B2 ..5.85
Sterling,Ill.(1) N15 ....5.75
Sterling,Ill. N15 .....5.85
Struthers,O. Y1 .....5.75
Waukegan,Ill. A7 .....5.75
Worcester,Mass. A7 ....6.05

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....7.20
Alton,Ill. L1 .....7.375
Bartonville,Ill. K4 .....7.30
Buffalo W12 .....7.20
Cleveland A7 .....7.20
Donora,Pa. A7 .....7.20
Duluth,Minn. A7 .....7.20
Fostoria,O. S1 .....7.20
Johnstown,Pa. B2 .....7.20
LosAngeles B3 .....8.15
Milbury,Mass.(12) N6 ..7.50
Minnequa,Colo. C10 ....7.45
Monessen,Pa. P7, P16..7.20
Muncie,Ind. I-7 .....7.40
Palmer,Mass. W12 ....7.50
Pittsburg,Calif. C11 ....8.15
Portsmouth,O. P12 ....7.20
Roebling,N.J. R5 .....7.50
So.Chicago,Ill. R2 .....7.20
So.SanFrancisco C10 ...8.15
SparrowsPt.,Md. B2 ....7.30
Struthers,O. Y1 .....7.20
Trenton,N.J. A7 .....7.50
Waukegan,Ill. A7 .....7.20
Worcester A7,J4,T6,W12 7.50

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....6.90
Alton,Ill. L1 .....7.075
Buffalo W12 .....6.90
Cleveland A7 .....6.90
Donora,Pa. A7 .....6.90
Duluth,Minn. A7 .....6.90
Johnstown,Pa. B2 .....6.90
KansasCity,Mo. S5 ....7.60
LosAngeles B3 .....7.85
Minnequa,Colo. C10 ....7.075
Monessen,Pa. P7, P16..6.90
NewHaven,Conn. A7 ....7.20
Palmer,Mass. W12 .....7.20
Pittsburg,Calif. C11 ....7.85
Portsmouth,O. P12 ....6.90
Roebling,N.J. R5 .....7.20
So.Chicago,Ill. R2 .....6.90
So.SanFrancisco C10 ....7.85
SparrowsPoint,Md. B2 ..7.00
Struthers,O. Y1 .....6.90
Trenton,N.J. A7 .....7.20
Waukegan,Ill. A7 .....6.90
Worcester,Mass. A7 .....7.20

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....11.375
Bartonville,Ill. K4 ....11.30
Buffalo W12 .....11.20
Chicago W13 .....11.20
Cleveland A7 .....11.20
Crawfordsville,Ind. M8.11.30
Fostoria,O. S1 .....11.20
Jacksonville,Fla. M8 ..11.73
Johnstown,Pa. B2 ....11.20
Kokomo,Ind. C16 ....11.20
Minnequa,Colo. C10 ....10.95
Monessen,Pa. P16 ....11.20
Muncie,Ind. I-7 .....11.40
Palmer,Mass. W12 ....11.50
Roebling,N.J. R5 ....11.50
So.SanFrancisco C10 ..11.55
Waukegan,Ill. A7 .....11.20
Worcester,Mass. A7,T6.11.50

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4 .....9.90
Buffalo W12 .....9.90
Johnstown,Pa. B2 .....9.90
Minnequa,Colo. C10 ..10.025
Monessen,Pa. P16 ....9.90
Muncie,Ind. I-7 .....10.10
Portsmouth,O. P12 ....9.90
Roebling,N.J. R5 .....10.20
SparrowsPt.,Md. B2 ..10.00

ROPE WIRE (A)

Alton,Ill. L1 .....9.75
Bartonville,Ill. K4 ....9.75
Buffalo W12 .....9.75
Fostoria,O. S1 .....9.75
Johnstown,Pa. B2 .....9.75
Monessen,Pa. P7, P16 ..9.75
Muncie,Ind. I-7 .....9.95
Palmer,Mass. W12 ....10.05
Portsmouth,O. P12 ....9.75
Roebling,N.J. R5 ....10.05
SparrowsPt. B2 .....9.85
Struthers,O. Y1 .....9.75
Worcester J4, T6 .....9.65

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE

(Continued)

WIRE, Tire Bead

Alton,Ill. L1	13.25
Bartonville,Ill. K4	13.25
Monessen,Pa. P16	13.15
Portsmouth,O. P12	13.15
Roebling,N.J. R5	13.45

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville,Ind. M8	8.05
Dover,O. G6	7.95
Fostoria,O. S1	7.95
FranklinPark,Ill. T6	8.05
Kokomo,Ind. C16	8.05
Massillon,O. R8	7.95
Milwaukee C23	8.15
Monessen,Pa. P7, P16	7.95
Pawtucket,R.I. N8	8.25
Rome,N.Y.(32) R6	7.95
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	8.25

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	6.90	7.30**
Aliquippa J5	6.90	7.425§
Atlanta A11	7.00	7.55
Bartonville(48) K4	7.00	7.55
Buffalo W12	6.90	7.30†
Cleveland A7	6.90	....
Crawfordsville M8	7.00	7.55
Donora,Pa. A7	6.90	7.30†
Duluth,Minn. A7	6.90	7.30†
Fairfield T2	6.90	7.30†
Houston,Tex. S5	7.15	7.55†
Jacks'ville,Fla. M8	7.425	7.95
JohnstownB2(48)	6.90	7.45*
Joliet,Ill. A7	6.90	7.30†
KansasCity,Mo. S5	7.15	7.55†
Kokomo C16	7.00	7.40†
LosAngeles B3	7.85	....
Minnequa C10	7.15	7.55**
Monessen P7 (48)	6.90	7.45
Palmer,Mass. W12	7.20	7.60†
Pitts.,Calif. C11	7.85-8.25	†
Portsmouth,O. P12	6.90	....
Rankin A7	6.90	7.30†
So.Chicago R2	6.90	7.30**
So.S.Fran. C10	7.85	8.25**
SparwsPt.B2(48)	7.00	7.55*
Sterling(1)(48)	N15 6.90	7.45
Struthers,O.(48)	Y1 6.90	7.40‡
Worcester,Mass. A7	7.20	....

*Based on 11c zinc; †5c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras.

WOVEN Fence, 9-15½ Ga.

	Col.
Ala.City,Ala. R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga.J5	149§
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	151
Donora,Pa. A7	146†
Duluth,Minn. A7	146†
Fairfield,Ala. T2	146†
Houston,Tex. S5	151†
Johnstown,Pa.(43) B2	149
Joliet,Ill. A7	146†
KansasCity,Mo. S5	151†
Kokomo,Ind. C16	148†
Minnequa,Colo. C10	151**
Monessen,Pa. 9 ga. P17	149
Pittsburg,Calif. C11	169†
Rankin,Pa. A7	146†
So.Chicago,Ill. R2	146**
Sterling,Ill.(1) N15	149

†Based on 5c zinc; *11c zinc; §10c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	155
Atlanta A11	157
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	157
Donora,Pa. A7	155
Duluth.Minn. A7	155
Fairfield,Ala. T2	155
Joliet,Ill. A7	155
Houston S5	160
KansasCity,Mo. S5	160
Kokomo,Ind. C16	157
Minnequa,Colo. C10	160
Pittsburg,Calif. C11	179
So.Chicago,Ill. R2	155
So.SanFran.,Calif. C10	179
SparrowsPoint,Md. B2	157
Sterling,Ill.(1) N15	155

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	159**
Aliquippa J5	156§
Atlanta A11	164
Bartonville,Ill. K4	164
Crawfordsville,Ind. M8	164
Donora,Pa. A7	159†
Duluth,Minn. A7	159†
Fairfield,Ala. T2	159†
Houston,Tex. S5	164†
Johnstown,Pa. B2	162*
Joliet,Ill. A7	159†
KansasCity,Mo. S5	164†
Kokomo,Ind. C16	161†
Minnequa,Colo. C10	164**
Monessen,Pa. P7	162
Pittsburg,Calif. C11	179†
Rankin,Pa. A7	159†
So.Chicago,Ill. R2	159**
So.SanFrancisco C10	179**
SparrowsPoint,Md. B2	164*
Sterling,Ill.(1) N15	162

†Based on 5c zinc; *11c zinc; §10c zinc; **Subject to zinc equalization extras.

WIRE (16 Gage)

	An'ld Stone	Galv. Stone
Ala.City R2	13.15	14.70**
Bartonville K4	13.25	15.10
Buffalo W12	13.15	....
Cleveland A7	13.15	....
Crawfrdsville M8	13.25	15.10
Fostoria,O. S1	13.25	14.80†
Johnstown B2	13.15	15.00*
Kokomo C16	13.25	14.80†
Minnequa C10	13.40	15.10**
Palmer,Mas.W12	13.15	14.70†
Pitts.,Calif. C11	13.50	15.05†
So.Chicago R2	13.15	14.70
SparrowsPt. B2	13.25	15.10*
Sterling(1) N15	13.15	15.00
Waukegan A7	13.15	14.70†
Worcester A7	13.45	....

*Based on 11c zinc; †5c zinc; §10c zinc; **Subject to zinc equalization extras.

NAILS, Stock

To Dealers & Mfrs. (7)	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	137
Atlanta A11	139
Bartonville,Ill. K4	139
Chicago,Ill. W13	137
Cleveland A9	142
Crawfordsville,Ind. M8	139
Donora,Pa. A7	137
Duluth,Minn. A7	137
Fairfield,Ala. T2	137
Galveston,Tex. D7	145
Houston,Tex. S5	142
Johnstown,Pa. B2	137
Joliet,Ill. A7	137
KansasCity,Mo. S5	142
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	156
Rankin,Pa. A7	137
So.Chicago,Ill. R2	137
SparrowsPt.,Md. B2	139
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	143

NAILS, CUT (100 lb keg)

To Dealers (33)	
Conshohocken,Pa. A3	$8.30
Wheeling,W.Va. W10	8.30

STAPLES, Polished Stock

To Dealers & Mfrs. (7)	Col.
Aliquippa,Pa. J5	138
Atlanta A11	140
Bartonville,Ill. K4	139
Crawfordsville,Ind. M8	139
Donora,Pa. A7	138
Duluth,Minn. A7	138
Fairfield,Ala. T2	138
Johnstown,Pa. B2	138
Joliet,Ill. A7	138
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	157
Rankin,Pa. A7	138
Sparrows Pt., Md. B2	140
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	144

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2	150
Duluth,Minn. A7	150
Franklin,Pa. F5	150
Johnstown,Pa. B2	150
Marion,O. P11	150
Minnequa,Colo. C10	155
Moline,Ill. R2	155
So.Chicago,Ill. R2	150
Tonawanda,N.Y. B12	150
Williamsport,Pa. S19	150

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, per cent off list, f.o.b. midwestern plants)

4 in. and shorter:	
½-in. & smaller diam	2
Over 4 in. through 6 in.:	
½ in. & smaller diam	+3
6 in. and shorter:	
⅞-in. and ⅝-in.	+4
¾-in. and larger	+6
Longer than 6 in.:	
All diameters	+15
Lag bolts, all diams:	
6 in. and shorter	6
Over 6 in. long	+2
Ribbed Necked Carriage	+4
Blank	10
Plow	23
Step, Elevator, Tap and Sleigh Shoe	10
Tire Bolts	+3
Boiler & Fitting-Up Bolts	21

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	55
H.P., Hex, regular & heavy:	
¾" and smaller	55
⅞" to 1⅛", inclusive.	58
1¼" to 1½", inclusive	60
1⅝" and larger	55
C.P. Hex regular & heavy:	
All sizes	55
Hot Galv. Nuts (all types):	
¾" or smaller	38
⅞" to 1½", inclusive.	41
Finished Hex Nuts:	
New standard, all sizes	55
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	55

SQUARE HEAD SET SCREWS

(1035 steel; packaged; per cent off list)

1 in. diam x 6 in. and shorter	34
1 in. and smaller diam x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	43
Plated finishes	23

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼-in. through ⅝-in.	38
¾-in. through 1 in.	15
Longer than 6 in.:	
¼-in. through ⅝-in.	20
¾-in. through 1 in.	7

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 9.25
7/16-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1¾	13	25.28	30.31	24.52
2	13	23.33	33.97	27.48
2¼	13	31.91	38.26	30.95
2¼	12	34.63	41.52	33.59
2½	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

RAILS	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	4.45	4.35	4.40	5.35
Ensley,Ala. T2	4.45	4.35	...	5.35
Fairfield,Ala. T2	...	...	...	5.35
Gary,Ind. U5	4.45	4.35	4.40	...
IndianaHarbor,Ind. I-2	4.45	4.35	4.40	...
Johnstown,Pa. B2	...	...	...	(16)5.35
Lackawanna,N.Y. B2	4.45	4.35	...	5.35
Minnequa,Colo. C10	4.45	4.35	...	5.85
Steelton,Pa. B2	4.45	4.35	...	5.35
Williamsport,Pa. S10	...	...	...	5.35

TIE PLATES

Fairfield,Ala. T2	5.275
Gary,Ind. U5	5.275
Ind.Harbor,Ind. I-2	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Seattle B3	5.425
Steelton,Pa. B2	5.275
Torrance,Calif. C11	5.425

TRACK BOLTS (20) Treated

Cleveland R2	11.50
KansasCity,Mo. S5	11.50
Lebanon,Pa. B2	11.50
Minnequa,Colo. C10	11.50
Pittsburgh O3, P14	11.50
Seattle B3	12.00

AXLES

Ind.Harbor,Ind. S13	6.75
Johnstown,Pa. B2	6.75

JOINT BARS

Bessemer,Pa. U5	5.425
Fairfield,Ala. T2	5.425
Ind.Harbor,Ind. I-2	5.425
Joliet,Ill. U5	5.425
Lackawanna,N.Y. B2	5.425
Minnequa,Colo. C10	5.425
Steelton,Pa. B2	5.425

SCREW SPIKES

Cleveland R2	11.00

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.30
Ind.Harbor,Ind. I-2, Y1	7.30
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.30
Minnequa,Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B2	7.80
So.Chicago,Ill. R2	7.30
Struthers,O. Y1	7.30
Youngstown R2	7.30

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron: 98+% Fe, annealed.	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N. J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	21.00
Annealed, 99.5% Fe.	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frght. allowed:	
Carlots	32.20
Ton lots	34.20
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	31.25-39.75†
Bronze, 5000-lb lots	51.50-54.75†
Copper:	
Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	97.00
Nickel-Silver, 5000-lb lots	47.50-51.00
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	94.00
Stainless Steel, 316	$1.25
Tin	14.50*
Zinc, 5000-lb lots	17.25-31.00‡

Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	4.95
Less than 1000 lb	5.10
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16"; 1 7/16" to 1 15/16" 4.78c; 1 15/16" to 7 5/16" 5.15c.
(6) Chicago or Birmi. base.
(7) To jobbers, 3 cols. lower.
(8) 16 Ga. and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.35c. H.S.-L.A.
(31) Widths over ⅝-in.; 6.40c for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv
Aliquippa, Pa. J5	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Ambridge, Pa. N2	13.5	..	17.5	...	20	...	21.5	...	21.5	...	20.75	...	23.25	..
Lorain, O. N3	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Youngstown Y1	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv
Aliquippa, Pa. J5	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.2
Alton, Ill. L1	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.2
Benwood, W. Va. W10	24	+4.5	15.25	+10.25	7.25	+17.25	23.75	6.5	26.75	10.5	29.25	14	31.75	15.2
Butler, Pa. F6	25	+3.5	17	+ 8.5	9.5	+15	....	..	....	...	....	..	....	...
Etna, Pa. N2	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.2
Fairless Hills, Pa. N3	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.2
Fontana, Calif. K1	...	...	....	....	....	....	10.75	+6.5	13.75	+2.5	16.25	1	18.75	2.2
Ind. Harbor, Ind Y1	...	...	....	....	....	....	22.75	5.5	25.75	9.5	28.25	13	30.75	14.2
Lorain, O. N3	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.2
Sharon, Pa. S4	25	+3.5	17	+ 8.5	9.5	+15	....	..	....	...	....	..	....	...
Sharon, Pa. M6	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.2
Sparrows Pt., Md. B2	23	+5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.2
Youngstown R2, Y1	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.2
Wheatland, Pa. W9	23	+5.5	15	+10.5	7.5	+17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.2

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv
Aliquippa, Pa. J5	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Alton, Ill. L1	30.25	14.25	30.75	14.75	32.25	15	32.25	15	....	...	....	...
Benwood, W. Va. W10	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.7
Etna, Pa. N2	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.7
Fairless Hills, Pa. N3	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.7
Fontana, Calif. K1	19.25	3.25	19.75	3.75	21.25	4	21.25	4	12.5	+5.25	12.5	+5.2
Ind. Harbor, Ind. Y1	31.25	15.25	31.75	15.75	33.25	16	33.25	16	24.5	6.75	25.5	6.7
Lorain, O. N3	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sharon, Pa. M6	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.7
Youngstown R2, Y1	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.7
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.7

*Galvanized pipe discounts based on current price of zinc (11.50c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. Bars; H.R. Strip	Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.75	21.00	30.00	34.75	30.25	35.75	37.75	41.75	38.75
302	17.75	23.25	30.25	35.00	32.50	36.00	38.00	42.00	42.00
302B	19.00	25.00	31.00	35.00	35.50	36.00	38.00	45.25	45.25
303	....	25.25	32.75	37.75	....	38.75	40.25	46.00	46.00
304	19.00	24.50	31.75	36.75	35.00	38.00	40.50	44.50	44.50
304L	....	....	36.75	41.75	40.00	43.00	45.50	49.50	49.50
305	20.50	26.50	33.50	37.25	38.00	38.00	41.00	47.50	47.50
308	20.75	27.25	36.25	41.75	39.00	43.00	47.00	49.00	49.00
309	27.75	36.00	44.00	50.50	50.50	51.75	55.00	63.25	63.25
309S	29.75	38.75	48.00	55.75	55.25	56.75	60.25	69.75	69.75
310	35.00	45.25	58.75	68.25	64.75	69.50	71.00	74.25	74.25
314	....	....	....	....	....	....	71.00	....	....
316	29.75	38.00	48.25	56.25	55.00	57.25	60.50	64.50	64.50
316L	....	....	53.25	61.25	60.00	62.25	65.50	69.50	69.50
317	35.00	45.50	59.25	68.75	69.50	70.25	72.75	79.00	79.00
321	23.50	30.25	36.00	41.50	41.75	42.75	46.50	51.25	51.25
330	....	....	61.50	....	....	72.00	73.25	81.25	81.25
18-8CbTa	29.25	38.25	46.00	52.25	53.00	53.75	58.50	66.50	66.50
403	....	....	27.00	30.75	....	32.00	34.25	....	....
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75
410	14.00	18.25	24.00	27.25	26.25	28.75	30.00	34.25	34.25
414	....	....	24.50	....	....	29.25	30.50	36.25	35.25
416	....	....	24.50	28.25	....	29.25	....	....	....
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	52.75	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75
430F	....	....	25.00	28.75	....	29.75	....	....	....
431	15.00	19.25	25.00	28.75	28.00	29.75	....	35.75	35.75
446	....	....	33.50	38.25	50.25	39.50	40.75	59.75	59.75

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%
Stainless:			
302	....	....	28.00
304	28.30	33.60	29.75
304-L	30.30	35.50	....
310	41.30	47.00	....
316	33.40	38.80	42.75
316-L	37.80	43.30	....
316-CB	38.90	45.50	....
321	30.00	35.30	34.25
347	32.20	38.60	44.25
405	23.90	31.10	....
410	23.40	30.60	....
430	23.40	30.60	24.25
Inconel	47.90	63.90	....
Nickel	39.50	54.10	....
Monel	40.80	54.80	....
L-Nickel	41.70	58.50	....
Copper*	....	....	46.00

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
*Copper**	*26.00*	*32.00*	....	....

*Deoxidized. Production points: Stainless-clad sheets New Castle, Ind. I-4; stainless-clad plates, Claymont, De C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates. Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per l
Regular Carbon	0.26	5% Cr Hot Work	0.40
Extra Carbon	0.31-.315	W-Cr Hot Work	0.42
Special Carbon	0.37	V-Cr Hot Work	0.44
Oil Hardening	0.405	Hi-Carbon-Cr	0.7

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per l
20.25	4.25	1.6	12.25	...	4.03
18.25	4.25	1	4.75	...	2.245-2.41
18	4	2	9	...	2.61
18	4	2	....	...	1.70
18	4	1	....	...	1.54
14	4	2	5	...	2.18
13.75	3.75	2	5	...	2.18
13.5	4	3	....	...	1.80
9	3.5	..	....	...	1.11
6	4	2	....	5	1.04
6	4	3	....	6	1.29
1.5	4	1	....	8.5	0.90

Tool steel producers include: A4, A8, B2, B8, C4, C9 C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
AlabamaCity,Ala. R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	56.50†	....
Gadsden,Ala. R2	52.38	52.88	....	....
Cincinnati, deld.	....	60.58	....	....
Buffalo District				
Buffalo H1, R2	56.00	56.50	57.00	57.50
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	57.50
Boston, deld.	66.65	67.15	67.65	....
Rochester,N.Y., deld.	59.02	59.52	60.02	....
Syracuse,N.Y., deld.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Chicago R2	56.00	....	56.50	....
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee,deld.	58.17	58.67	58.67	59.17
Muskegon,Mich., deld.	....	62.80	62.80	....
Cleveland District				
Cleveland A7, R2	56.00	56.50	56.50	57.00
Akron,O. deld.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
NewYork, deld.	....	62.28	62.78	....
Newark, deld.	61.02	61.52	62.02	62.52
Birdsboro,Pa. B10	58.00	58.50	....	....
Chester,Pa. C31	....	48.50	49.00	....
Philadelphia, deld.	....	50.16	50.66	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Philadelphia, deld.	59.66	60.16	60.66	61.16
Troy,N.Y. R2	58.00	58.50	59.00	59.50
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Aliquippa, deld.	.. .	57.87	57.87	58.37
McKeesRocks, deld.	....	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	....	58.16	58.16	58.66
Verona,Trafford, deld.	58.19	58.69	58.69	59.19
Brackenridge, deld.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,SoDuquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....

	Basic	No. 2 Foundry	Malleable	Bessemer
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O. deld.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K4	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T2	....	52.50*	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, deld.	61.76	62.26	....	....

*Low phos, southern grade. †Phos, 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson,O. G2, J1	$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.50 Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, (Open-hearth & Fdry, freight allowed K2	85.00
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	88.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland A7 (Intermediate)	$61.00
Lyles,Tenn. T3	70.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, deld.	67.55
Troy,N.Y. R2	64.00

Warehouse Steel Products

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham and St. Paul, 15 cents; Philadelphia, New York, Boston and Los Angeles, 10 cents; Buffalo, 25 cents on C.R. and galvanized sheets, C.F. and alloy bars and 20 cents on other commodities; Houston, Seattle, Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302‡‡	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	6.02	7.51	7.79	....	6.69	...	6.68	8.52[6]	12.54	6.72	6.37	7.76
Birmingham	6.35	7.35	8.25[2]	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.52	45.28[9]	7.47	...	7.20	8.60	12.30	7.49	7.37	8.50
Buffalo	6.35	7.40	8.79	....	6.70	...	6.50	7.40	12.00	6.72	6.65	7.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	46.05	6.62	...	6.51	7.25	11.75	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.30	46.10	6.86	...	6.75	7.55	12.00	6.86	6.81	7.89
Cleveland	6 38	7.38	8.25	46.16	6.72	...	6.57	7.35	11.81	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.54	11.95	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	...	6.70	...	6.50	7.45[4]	....	6.69	6.52	7.64
Houston	7 35	7.80	9.93	...	7.70	9.30	7.70	9.50	....	7.60	7.35	8.75
Los Angeles	7.50	9.35	9.95	50.15	7.85	11.75	7.45	10.15	13.15	7.65	7.45	9.55
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.44	11.84	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.60	....	7.04	6.87	...
New York	6.97	7.91	8.79	44.95	7.56	...	7.37	8.73[6]	12.13	7.38	7.27	8.68
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.44	8.26	41.98[9]	6.96	8.80	6.74	7.86[8]	11.96	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	46.00	6.72	...	6.51	7.35	11.75	6.69	6.52	7.64
Portland, Oreg.	7.00	7.75	8.90	48.50	7.25	...	7.05	10.20	14.00	7.00	6.85	8.75
Richmond, Va.	6.43	7.39	8.67	...	6.77	...	6.71	8.33	....	7.08	6.65	8.08
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.64[8]	12.04	7.09	6.81	7.93
St. Paul	7.04	8.04	8.96	....	7.28	...	7.17	8.01	....	7.35	7.18	8.30
San Francisco	7.55	8.95	8.70	51.65	7.80	...	7.35	10.05	13.05	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	51.00	8.20	...	7.80	10.95	13.50	7.75	7.80	9.60
Spokane	8.35	9.65[7]	10.05	....	7.80	...	7.80	10.85§§	14.25	7.45	7.55	9.60
Washington	6 70	7.99	7.97	....	7.37	...	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, based on 11-cent zinc except in New York, Philadelphia, Los Angeles, Cincinnati, Cleveland, Pittsburgh, San Francisco (11.50-cent zinc) and in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **⅛-in. and heavier; ††as annealed; ‡‡prices include $2 for crating; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; [2]—500 to 9999 lb; [4]—4000 lb and over; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 to 3999 lb; [8]—2000 to 3999 lb; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

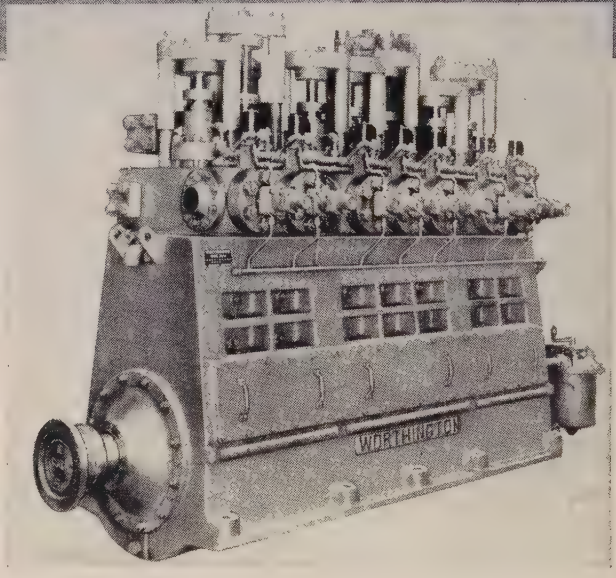
High-pressure water descales thousands of tons of steel daily

It takes vast quantities of high-pressure water to remove the scale from steel sheets, plates and billets going through rolling mills like the one shown above.

To deliver high-pressure water for this kind of work, more and more leading names in industry are specifying Worthington heavy-duty multi-plunger power pumps. Here are some of the reasons why:

Worthington's patented synchronized suction-valve unloading allows delivery to start or stop as often as you want, quickly but gradually, without any shock or disturbance.

Ceramic plungers, optional on all of Worthington's power pumps, are precision-made for complete and easy interchangeability. As hard as tungsten carbide, these plungers resist corrosion, abrasion and breakage.



WORTHINGTON HEAVY-DUTY MULTI-PLUNGER POWER PUMPS deliver high-pressure water for use in hydraulic descaling system in this rolling mill. These rugged pumps are also used in hydraulic press work, foundry cleaning systems, hydrostatic testing and high-pressure process pumping.

Individual valve-hole covers permit quick and easy access for valve maintenance without disturbing piping.

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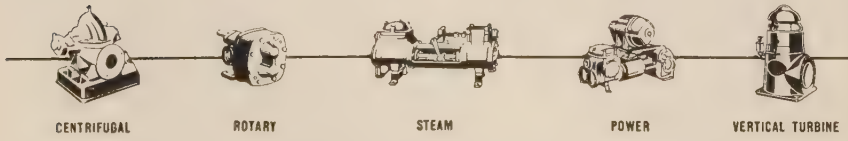
P.3.6



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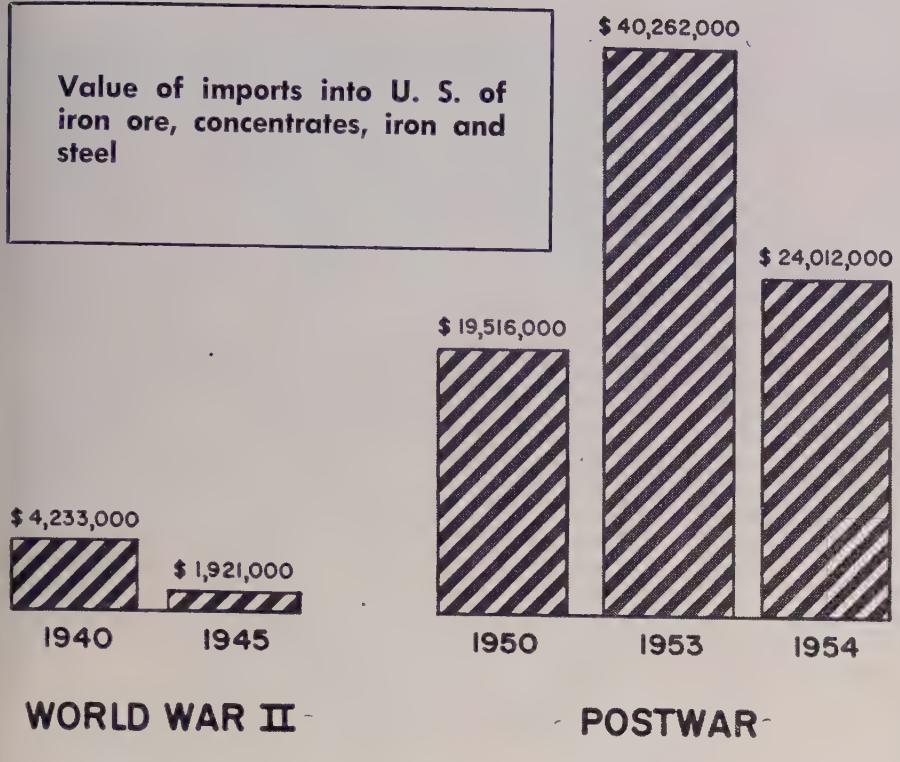


Source: U. S. Department of Commerce.

Swedish Steel Makes Postwar Comeback

SOMETIMES a steel specialty or metal product fails to come all the way back once it becomes temporarily unavailable and reasonably satisfactory substitutes penetrate its markets. Not so with quality Swedish steel and metallics.

If Sweden's steel mills can supply the demands of U. S. consumers this year, their tonnage and dollar sales will equal, may surpass, the peak year of 1953. That year the value of imports, including ore, concentrates, sponge iron, semifinished and cold-finished products, was slightly over $40.3 million.

The "ifs" facing Swedish exporters include the adjustment of labor agreements and European demand. Swedish mills are loaded with orders for European markets, so tonnage available for shipment to the U. S. may be limited.

Comeback—For nearly four years, no Swedish steel was available to America, except moderate stocks accumulated before the U. S. entered World War II. Sweden re-entered the U. S. market in the second half of 1945. By 1947-48, it had regained ground lost and is now selling more steel and metallics here than it did before the war. Pipe, tubes and hot-rolled bars are exceptions. They have not returned to prewar levels.

Like domestic steel production, imports of Swedish steel declined in 1954 because of inventory reduction and lower demand. Yet shipments of concentrates, pig iron, semifinished and finished steel approximated $24 million, compared with $19.5 million in 1950, $1.9 million in 1945. Volume thus far in 1955 is far ahead of that of 1954. On some products it is in excess of 1953's volume.

Small but Mighty — Tonnagewise, Swedish steel requirements are a drop in the bucket when compared with total imports of heavier products or domestic steel production. Their importance lies in critical applications, such as the flapper valve, which is the heart of the mechanism in refrigerators. In many applications, less than 1 lb of Swedish steel is used. From one ton of 0.004-gage strip nearly one million razor blades can be produced. About 750,000 can be made from one ton of 0.006 strip.

Only in rare cases have substitutes replaced Swedish grades. Their volume for new uses has gained. Swedish steel is back for high-quality razor blades, valve spring and piston spring wire, clock and watch springs, camera shutter steel and surgical blade steel. In strip and wire more than 90 per cent is used as specialties, including textile machine parts, band saws, compressor valves, feeler gages, knife blades, textile reed stock, shock absorbing components, trowel steel, needles, a wide range of springs and piston ring segments and expanders.

Built-in Qualities — The bulk of cold-finished specifications are high carbon, up to 0.90 per cent. Properties for numerous applications include high fatigue life, vital especially in springs. High precision and close tolerances are also characteristic.

Iron ore and concentrates have increased sharply, notably concentrates —close to 2.4 million tons may be taken this year compared with 239,250 tons in 1938. The amount of granular and sponge iron imported from Sweden in 1954 exceeded that of the 1953 peak year; sponge iron used in metal powder metallurgy is being imported at the rate of 12,000 tons a year.

Rods Return—Wire rods may total 16,000 tons in 1955. They slumped to 9226 tons in 1954. Wire rods, however, have snapped back to their prewar mark and are on the way up. In 1953, imports of rods were practically identical with those of 1937, or 15,541 tons, but hot-rolled steel bars for cold finishing have not returned to the prewar tonnage level.

The bulk of high-grade, cold-finished Swedish steel specialties is sold through warehouses with four handling the lion's share; most have direct connection with producers; they have sales offices at larger, specialty-steel consuming points. A half dozen importers handle most of the steel at the major port of entry, the Port of New York. Some tonnage comes through Canada. During open-water months, direct shipments are made to Cleveland. A considerable number of specialty warehouses handle one or two lines, notably tool steel.

Direct Delivery—Hot-rolled, semifinished and concentrates including a large part of the wire rod volume are moved direct to consumers in most cases. In an expansion move, one leading Swedish steel warehouse —Sandvik Steel Inc.—is consolidating its four divisions at Fairlawn, N. J.

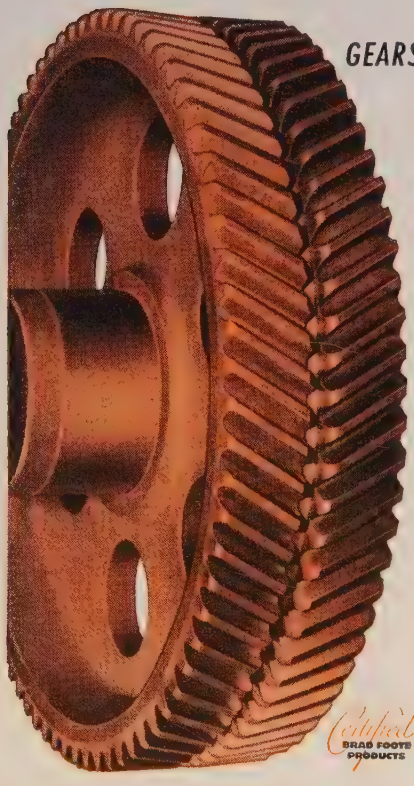
For most applications, the cost of Swedish steel is somewhat higher than that of domestic steels. Although for most uses, cost is a secondary factor to performance, notably when the metal is used in small volume for vital parts.

When Swedish high-grade, quality steels were blacked out for nearly four years, many metallurgists and steelmakers here believed they had taken over; they made good substitutes, including best quality razor blade stock, and broke down barriers they had been unable to overcome.

But guns had hardly cooled in 1945 before long-time users of Swedish steel were again demanding their old specifications for wire, including flat, rods and cold strip. Within the next

Distortion is Controlled in BRAD FOOTE'S DEEP CASE HARDENING

The BRAD FOOTE DEEP CASE HARDENING process has been perfected to a degree which practically eliminates distortion



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No place is distortion control more important than on heavy duty gears which are run almost continuously at full rating and subjected to extreme shock loads such as are encountered in rolling mill operations. BRAD FOOTE **DEEP CASE HARDENED** gears run true and distribute the load evenly across the full face and on the designed bearing surfaces of each tooth.

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In addition, BRAD FOOTE rigidly controls to set standards the depth of **DEEP CASE HARDENING** and the carbon content. The tooth surfaces are of maximum hardness for long life, but the carbon content is gradually diminished at successive depths below the surface until it blends to the metal of the core itself.

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Thus the cores of the teeth and the body of the gear remain ductile and shock-resistant while the teeth are given an increase in service life of over 50%.

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year or two, most products made a strong comeback. Semifinished and concentrates had surpassed prewar volume. Why?

The Reasons—The Swedes always have made good iron and steel; starting with an advantage of superior ore, their mills are not particularly "tonnage" minded. They operate with closely controlled small heats and follow up with close-tolerance finishing.

Stainless Steel . . .

Stainless Steel Prices, Page 136

Superior Steel Corp., Carnegie, Pa., reports first quarter sales will undoubtedly establish a new record in production of stainless steel. Economic forecasts point to a continued high level of sales. Despite sharp reduction in ordnance requirements, producers expect a profitable year.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 133 & 134

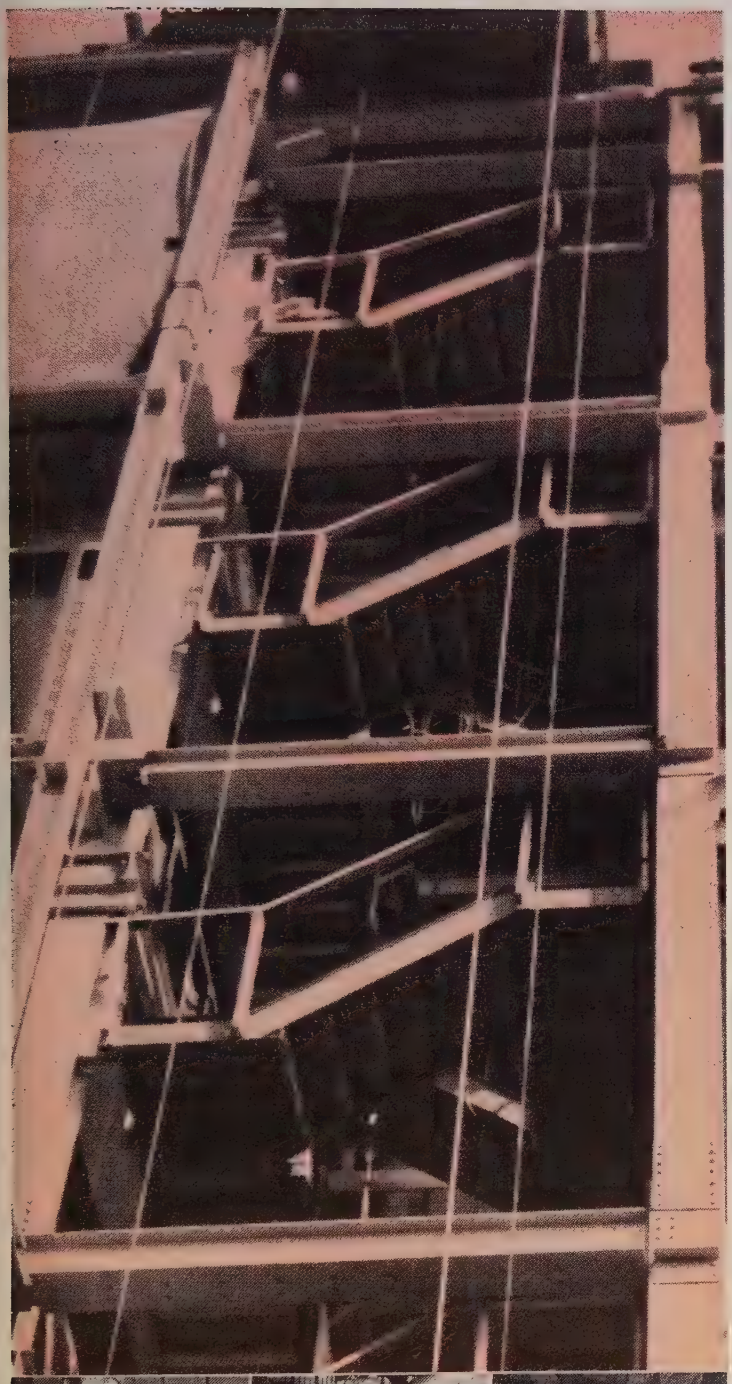
Most producers of cold-rolled and continuous galvanized sheets have no open tonnage available for delivery before the third quarter. Buyers are moving cautiously, not committing themselves too far into the future. Many feel if prices are increased (likely in event steel wages rise) and if there is an automotive strike, supplies of cold-rolled will improve in the third quarter, barring outbreak of war.

While there is slightly less pressure for sheets in the light of extended deliveries, more tonnage still is being offered the mills than they are willing to accept for third quarter. The theory of some makers is that when the time comes they will get their share of going business, obviating the necessity of grabbing all the tonnage offered now, a large part of which may be speculative. In general, the mills are accepting third quarter orders on a month-to-month basis.

Producers are virtually on an unofficial quota system for early second quarter shipments. Consumers, however, are able to fill most of their requirements without going to the warehouses for substantial fill-in tonnage. Specialties, such as silicon, enameling and electrocoated sheets are booked well into midsummer. The same is true of black plate and tin plate. Hot-rolled sheets, however, are not a second quarter sell-out, but they are moving up.

Cold-rolled sheet production of Great Lakes Steel Corp., Detroit, will be increased by at least 50,000 tons monthly when its current expansion and improvement program is completed by end of this year.

(*Please turn to page* 143)



Stair Specialists

cut costs with

J & L Junior Channels

Michael Pfaff and his sons Bill and Dick are experts on how to get up in the world economically. They build steel stairs with J&L Junior Channels. In fact during 1953 alone, their company, Standard Metal Products, built 456 floors of stairs—five times the height of the Empire State Building.

One of the big reasons for Standard's success is the way Junior Channels help out in production and shipping costs. Mr. Pfaff reports the company saves about 20 percent in shipping weight on the stairs fabricated with lightweight Junior Channels over an equivalent stair built of ordinary channels. In other words, for each ten floors of stairs two floors are shipped free.

Another advantage pointed out by Mr. Pfaff is that the lightweight J&L Channels can be handled faster and easier during fabrication and finishing. J&L Junior Channel stair stringers are strong, lightweight members. 12 inch sections weigh only 10.6 pounds per lineal foot . . . 10 inch sections 6.5 or 8.4 pounds depending on the web thickness required. A standard structural channel of the same height would weigh almost twice as much. Standard Metal Products Company translates this weight-saving feature into a dollar savings because less weight means less fabricating, erecting and material cost.

Finally, J&L Junior Channel stair stringers provide clean, straight lines that give excellent appearance without further finishing and take ornamental trim readily.

Check the many outstanding features of J&L Junior Channels for yourself. Write today for our booklet, "J&L Junior Channels."

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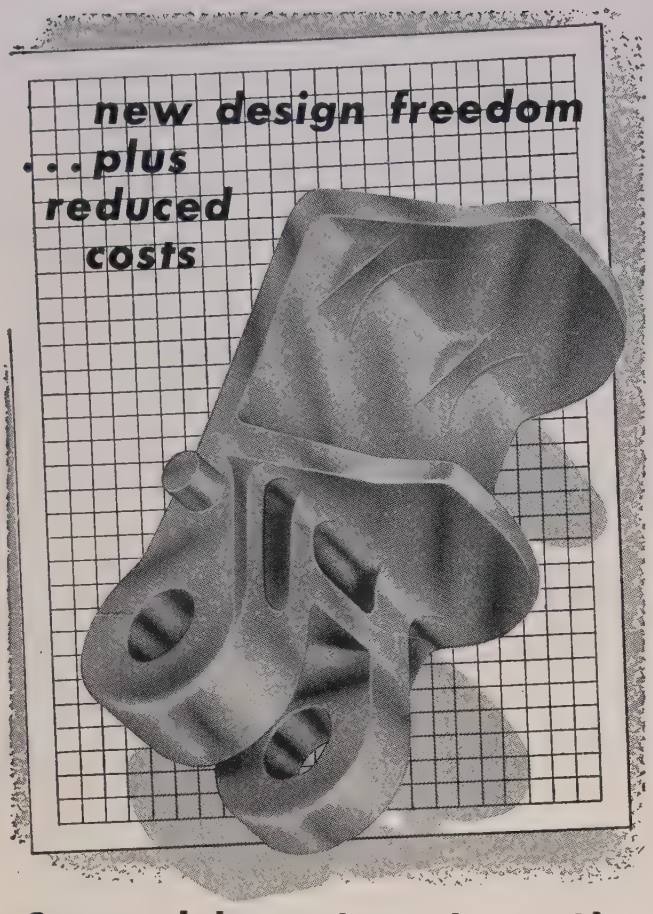

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Write for free literature describing the investment casting process.

CASE STUDY

DESIGNATION: Female Hinge

METAL USED: Stainless Steel (AISI 302)

QUALITY CONTROL: Chemical and physical affidavits furnished. Test Bars submitted. Produced with 100% X-Ray requirements.

PARTS: Designed and cast as single unit. Formerly composed of three units welded together.

ADVANTAGES: Strengthened with re-inforcing ribs in U-Rracket. Weight decreased without decrease in strength. Reaming holes only machining required. Formerly holes countersunk outer sides only, now cast with radii on both inner and outer sides. Greatly reduced cost.

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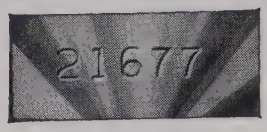

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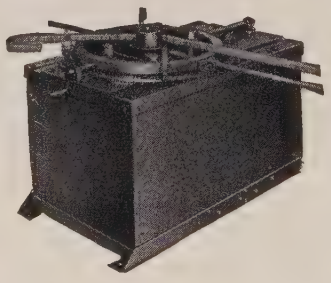
KARDONG FOUR-WAY BENDER

For Concrete Reinforcing Bars

Model D-2



The Model D-2 Kardong Bender is a Four Direction Horizontal Bender. With this bender it is not necessary to turn bars over to make reverse or second bends on beam bars. The Model D-2 is made in two sizes, Model D-2 Standard 6-inch, which will bend bars around collars 2-inch to 6-inch, and Model D-2 Special 8-inch, which will bend bars around collars 2-inch to 8-inch. Capacity of both models, 1¼-inch Square Bars. The Model D-2 is a production bender for reinforcing steel fabricating shop. Ask for catalog of our complete line of reinforcing bar benders.

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(*Concluded from page* 140)

U. S. Steel Export Co., New York, effective Mar. 28, revised its published price on hot-rolled sheets, 18 gage and heavier. It is quoting $4.42 per 100 lb, freight included to New York, Philadelphia and Baltimore.

Steel Bars . . .

Bar Prices, Page 132

Alloy steel bars are moving in better volume, with large orders reportedly being received from farm equipment producers and warehouses.

The outlook for the second quarter generally is considered promising even though some producers of carbon bars need an extra push in orders to move to the more economical two-shift operation. The order mix is still unbalanced, some makers complain. Certain sizes are booked solidly for one week, fall off the next.

Textile equipment builders are again buying cold-finished carbon bars in New England. For months they had been taking only minimum lots. More carbon and alloy bar mills are filled into May, with forward buying more in evidence. There is less cold-finished bar tonnage available from stock, notably the smaller sizes.

In general, deliveries average five weeks on hot-rolled carbon bars and longer on cold-finished. On the West Coast, fabricators report consumers' orders are holding up, despite lagging defense requirements.

Plates . . .

Plate Prices, Page 132

Some producers of sheared plate are now virtually sold out for second quarter. One mill, however, can still give as early as six weeks delivery and, in universal plates, deliveries can be had within four to six weeks. Demand, though, is expanding rapidly. Improvement is being experienced on both domestic and foreign account. Far more foreign inquiry is being received than is being booked.

Plates are now well up in the front of mill order volume with some producers sold out through June. Selling is in volume comparable with that in flat-rolled and there are indications demand will hold well into third quarter with heavy requirements for large diameter pipe prominent in over-all mill backlogs.

Construction will require larger tonnage in second quarter and a further push on the mills is expected from the warehouses. Improvement in railroad car requirements also is indicated. Oil storage tank demand is spurting, latest sizable award involving 10,850 tons of plates for tanks for the American Oil Co. at Yorktown, Pa. The Chicago Bridge & Iron Co. alone is reported to have booked contracts requiring 45,000 tons of plates.

In general plate buyers are finding it necessary to determine their requirements farther ahead as mill shipments become more extended. This applies particularly to thicknesses of ½-in. and smaller.

Wire . . .

Wire Prices, Pages 134 & 135

Seasonal gains are reflected in rising wire order backlogs at mills. The improvement is general, including both merchant and industrial items. The pickup in business is noticeable at virtually all producing points.

With some additional buying automotive consumers in New England are pressing for shipments of spring wire, including valve stock. Orders for mechanical spring wire are heavier. On high carbon specialties, April schedules are reported filled.

Improvement in finished wire demand generally has extended schedules about two weeks, with improvement noted in manufacturers bright wire, heading and miscellaneous grades. Consumers tend to anticipate needs slightly, and more second quarter volume is on mill books. Rope and fine wire are inclined to lag, but highway guard cable is more active.

The Midwest market has come under heavy pressure the last ten days or so. In addition to a seasonal increase in demand from the building industries and undiminished orders from automakers, furniture manufacturers are showing more interest in their requirements. Deliveries are reported extended to eight weeks.

Tin Plate . . .

Tin Plate Prices, Page 134

New uses continue to be found for heavy gage electrolytic tin plate, reports Jones & Laughlin Steel Corp., Pittsburgh. Where corrosion is not a great factor, the product is used as a replacement for long ternes, aluminum and zinc-coated sheets. Heavy-gage tin plate is used in automotive and engine parts, as well as building specialties and radio and television parts.

From its facilities at Aliquippa, Pa., J&L is shipping the product in coils 22 to 32 in. wide (as heavy as 22 gage) and cut lengths up to 120 in.

Canmakers are stepping up production schedules seasonally. Some setback in can needs will result from extensive freeze damage to peach and apple crops last week, but growing new uses, notably soft drinks, are expected to offset this.

Tubular Goods . . .

Tubular Goods Prices, Page 136

Seamless and welded tubular goods continue to perk up. Tubemakers hold moderate backlogs at Pittsburgh, and the second quarter outlook is described as promising. Buttweld sales, highly competitive in early first quarter, show marked improvement, with greater demand coming from jobbers and the construction industry. Oil country goods sales continue to rise. Prospects are for near-capacity tube mill operations this month, with sales particularly high in heavy-duty tubes.

At St. Louis, pipe shipments are reported improving in response to jobbers' inventory build-up for the construction season. Mill bookings average six weeks, somewhat more on sizes 1 in. and under.

Cast iron pipe sales agencies in the Pacific Northwest have concluded one of the best quarters in recent years from the standpoint of orders. Demand continues strong, and order volume during the current quarter will be substantial.

Pig Iron . . .

Pig Iron Prices, Page 137

Paced by automotive requirements for castings, midwestern gray iron foundries look forward to good April business. Malleable shops also expect to continue busy. As a result, merchant pig iron producers are assured of another active shipping month. Order books show more tonnage than they did at the start of March.

In the East a slight improvement is noted in iron buying, with some trade interests wondering if the strong upsurge in the steel market isn't finally beginning to be reflected in foundry operations.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 147

Philadelphia Coke Co. has advanced prices on foundry coke $1 a ton to $24, Philadelphia ovens. Advances by other district producers are expected to follow.

Republic Steel Corp. is planning to close its coke ovens at Troy, N. Y., about May 1. Cost of producing at the ovens is reported excessive. The 31 ovens will be kept in stand-by for possible emergency use. Coke will be shipped to the Troy furnace from other coke producing points.

Current Ferroalloy Quotations

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.). Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max, 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered, Spot, add 2c.

Electrolytic Manganese Metal: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: .Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload lump, bulk, C 0.025% max. (Simplex 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l, 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered, Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max) $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.5c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer. (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more. 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5%-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3⅜ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.05c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching, Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 11.85c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.45c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.55c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $12 per lb of contained Cb, less ton $12.05. Delivered. Spot, add 10c.

Ferrotitanium—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $6.25 per lb of contained Cb plus Ta., deld.; less ton lots $6.30.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carloads packed 1" x D, 45c pel lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%), C.l. packed, 17.50c per lb of alloy, ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c. f.o.b. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., $1.46 in all sizes except powdered which is $1.57; Washington, Pa., furnace, any quantity, $1.46.
Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.25 in cans; in bags, $1.24, f.o.b. Langeloth, Pa.; Washington Pa., $1.24.

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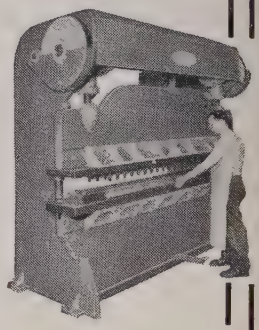

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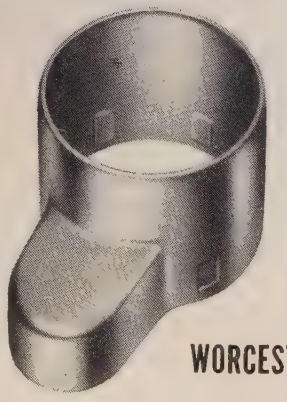

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Ores

Lake Superior Iron Ore

(Prices effective for the 1955 shipping season; gross ton, 51.50% iron natural, rail of vessel, lower lake ports)

Old range bessemer	$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Messabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60-68%	20.00
N. African hematite (spot)	nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore

Net ton unit, before duty

Foreign, wolframite, good commercial quality	$25.00-$26.00
Domestic, scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 85c-87c per long ton unit c.i.f. U. S. ports, duty for buyer's account; 46-47%, 75c-80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $40.00-$42.00
48% 3:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	31.00-32.00

Domestic

Rail nearest seller

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

56-60%	$3.25-$3.80
65%	4.15-4.25

Vanadium Ore

Cents per lb, V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Pueblo, Colo., $94; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $114; Salina, Pa., $119; Niles, O., $125; Los Angeles, Pittsburg, Calif., $137.20.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $120; Warren, Niles, O., Hays, Pa., $125; Morrisville, Pa., $123.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $130; Cutler, Utah, $121.55; Los Angeles, $127.85.

Super Duty: Hays, Sproul, Pa., Warren, Windham, O., Athens, Tex., $137; Morrisville, Pa., Niles, O., $140; Joliet, Ill., $143.

Semisilica Brick (per 1000)

Clearfield, Pa. $130; Woodbridge, N. J., $114.

Insulating Fire Brick (per 1000)

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick (per 1000)

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $77.50; Wellsville, O., $81.50; Clearfield, Pa., Portsmouth, O., $87; Perla, Ark., $109; Los Angeles $110.25; Pittsburg, Calif., $111.30.

High-Alumina Brick (per 1000)

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $181; Danville, Ill., $169.30.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $225; Danville, Ill., $213.20.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $260; Danville, Ill., $258; Clearfield, Pa., $267.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $147; Clearfield, Pa., $148.50; St. Louis, $159.30; Athens, Tex., $155.

Nozzles (per 1000)

Reesdale, Pa., $234.70; Johnstown, Pa., $240.70; Clearfield, Pa., $241.40; St. Louis, $259.45; Athens, Tex., $247.70; Bridgeburg, Pa., $267.50.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $183.50; Clearfield, Pa., $185.50; St. Louis, $195.80; Athens, Tex., $191.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $15.10; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite (per net ton)

Domestic, dead-burned bulk, ¾-in. grains with fines: Luning, Nev., Chewelah, Wash., $38.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.50-$14.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, Ind., ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	*24.00*
Swedeland, Pa., ovens	23.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, O., deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol, 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

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Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net tons, duty paid, metallurgical grade: European, $28-$30; Mexican, $25.50.

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Inches Diam	Length	Per 100 lb
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2	24	$47.75
2½	30	30.75
3	40	30.00
4	40	28.50
5⅛	40	28.25
6	60	25.50
7	60	25.25
8, 9, 10	60	22.75
12	72	26.00
14	60	22.50
16	72	21.50
17	60	22.00
18	72	21.50
20	72	21.25
CARBON		
8	60	11.40
14, 12, 10	60	11.10
14	72	10.25
17	60	10.25
17	72	9.85
20	84	9.85
20	90	9.65
24	72, 84	9.85
24	96	9.60
30	84	9.75
40, 35	110	9.50
40	100	9.50

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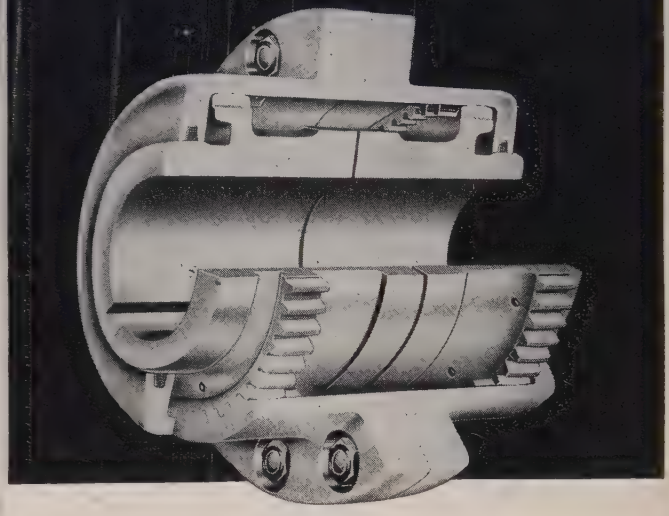

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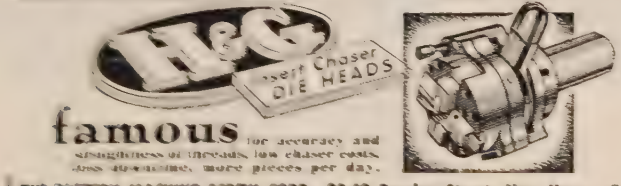

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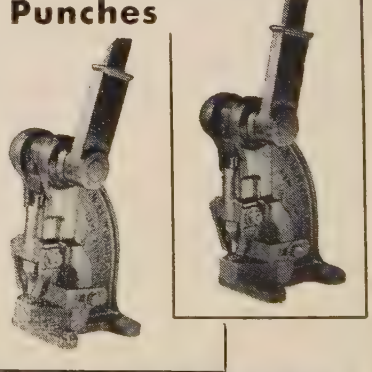


T. H. LEWTHWAITE MACHINE CO., INC.

Scrap . . .

Scrap Prices, Page 150

Philadelphia — The Fairless, Pa., consumer of open-hearth scrap entered the market last week and purchased at reduced prices. It bought prime steel grades at $37.50, delivered; No. 2 heavy melting at $34; and No. 2 bundles at $30. As a result, the market on these grades is down, with No. 1 heavy melting, No. 1 bundles and No. 1 busheling now holding at $37.50-$38, delivered; No. 2 heavy melting at $34-$34.50; and No. 2 bundles at $30.

With the domestic market softer, foreign prices also are lower, although there is still a good movement abroad. Except for the major open-hearth grades, prices are steady.

Chicago — Late mill purchases of steelmaking scrap have not altered prices on open-hearth grades, but electric furnace and railroad items are up $1 and $2 a ton. Continuing weak and virtually untested for the moment are dealer items, notably No. 2 heavy melting and No. 1 dealer bundles. With district steelmaking operations at 96.5 per cent of capacity, the small volume of buying is baffling. The answer lies in more than average use of hot metal and a generous supply of industry-generated scrap, which was returned to mills on a direct shipment basis.

Cleveland—The scrap market here is sluggish, with little new buying by the mills. Foundry purchases are reported picking up, reflecting some improvement in spotty operations. Prices are unchanged, but automotive lists are reported to have sold $2 under previous quotations. This is expected to press dealer scrap prices down when buying is resumed by the mills.

Pittsburgh—A major steelmaker bought a good-sized order of blast furnace scrap last week at prevailing prices. No. 2 bundles sold for $31-$32, reflecting a slight increase. Demand is steady. Some weakness is reported in shipments to the East. Possibility of change in scrap export controls has slowed demand for scrap from that quarter. Cast iron grades are showing greater strength, with higher prices paid the past week.

Buffalo—Placing of new orders by the area's top mill consumers is anxiously awaited by the scrap trade here. Prices are unchanged, with dealer stocks ample to meet requirements.

Cincinnati — March was a first-class month for local scrap dealers and brokers, probably will go down as the best in the last 12 to 15. Dealers generally were happy with prices, and there was no disposition to hold back material. The only price activity was in drop broken machinery, which advanced $1 to $45-$46.

Detroit—No price changes are reported in the scrap market here. None are expected until automotive lists are closed this week. Meanwhile, district steelmaking operations continue around 90 per cent of capacity, unchanged from the preceding week and just about 1 point above the district ingot rate a year ago.

St. Louis—No. 1 railroad heavy-melting scrap has moved up 75 cents per ton in response to competition from the Chicago and Kansas City markets. The strong undertone continues, but most prices are unchanged. Melters' ground stocks are comfortable, and they are buying daily requirements only. Shipments of dealer grades are slow, notably No. 1. The local market for rerollers remains dull, with most sales going to outside districts. Barge lines will begin accepting scrap shipments this week. No. 2 material will deliver at $1 higher here. Major movement is from St. Paul, Minneapolis, LaCrosse, Wis., New Orleans and Memphis, Tenn., to Granite City and Alton, Ill.

Los Angeles—One mill purchased a large quantity of No. 1 heavy melting steel to impart a generally stronger tone to the market. Dealers whose activity had been hampered by large mill inventories hope the purchase foreshadows increased mill operations.

San Francisco—Steel scrap prices are holding their recent advance despite the absence of large-scale buying by the mills. Export demand is a bolstering influence.

Seattle—Domestic buyers are not adding to inventories, but their purchases equal tonnage being consumed. As a whole, the market is firm, buoyed by export influences. Steel scrap prices are unchanged. Cast iron does not share the strength of steel grades, with No. 1 cupola quoted at $35. Buyers of electric furnace material are well stocked.

Warehouse . . .

Warehouse Prices, Page 137

Warehouse demand for cold-rolled sheets is so good at Chicago that sales are controlled to protect inventories for regular customers. That has been the situation in galvanized sheets for a long time. Hot-rolled sheet demand is improving, and for popular sizes and gages, a quantity restriction is necessary. Light plates constitute another product in which supply falls short of demand. Bars in all categories are moving up, but the supply-demand situation still is regarded normal.

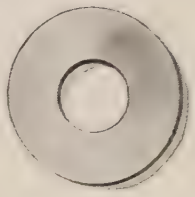
In the East, distributors are booking more orders, but average individual tonnage purchased is small. Total volume in the area, however, is 10 to 15 per cent heavier than a year ago and is on a broader base. Lengthening mill deliveries are channeling some fill-in volume to distributors.

Sales are reported fluctuating between good and fair at Pittsburgh. Sheet demand is strongest. One effect of higher mill operations is that the distributors are receiving some orders which ordinarily the mills would handle. Pacific Northwest distributors handling both steel and aluminum report that steady order volume in the first quarter was about 25 per cent above that of the like period last year.

Prices on stainless tubing, both seamless and welded, have been advanced approximately 2 per cent on the average by eastern warehouses. This is in line with increases effected by the mills.

Warehouses at Cincinnati would like to have a few more tons of sheets in stock. Mill deliveries are running well into August. Prices on rejects have started to firm up.

JOLIET



WROUGHT

write for our new catalog of standard and special washers for all types of industrial applications.

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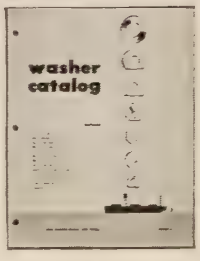


COMPANY

Moen & Connell Avenues
Joliet, Illinois
★

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Mar. 30	$37.41
Mar. 23	37.75
Feb. Avg.	36.79
Mar. 1954	24.37
Mar. 1950	28.23

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting...	38.00-39.00
No. 2 heavy melting...	35.00-36.00
No. 1 bundles	38.00-39.00
No. 2 bundles	*31.00-32.00*
No. 1 busheling	38.00-39.00
Machine shop turnings	22.00-23.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	26.00-27.00
Cast iron borings	26.00-27.00
Cut structurals 5 ft lengths	41.00-42.00
Heavy turnings	35.00-36.00
Punchings & plate scrap	42.00-43.00
Electric furnace bundles	38.00-40.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	41.00-42.00
Heavy breakable cast	39.00-40.00
Unstripped motor blocks	22.00-23.00
No. 1 machinery cast	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt	41.00-42.00
Rails, 2-ft and under	51.00-52.00
Rails, 18-in. and under	51.00-52.00
Rails, random lengths	45.00-46.00
Railroad specialties	44.50-45.50

Stainless Steel Scrap

18-8 bundles & solids	210.00-220.00
18-8 turnings	105.00-110.00
430 bundles & solids	95.00-100.00
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting...	34.00-36.00
No. 2 heavy melting...	31.00-32.00
No. 1 bundles	34.00-36.00
No. 2 bundles	28.00-29.00
No. 1 busheling	34.00-36.00
Machine shop turnings	17.00-18.00
Mixed borings, turnings	24.00-25.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Low phos.	34.00-36.00
Cut structurals, plate 2 ft and under	*41.50-42.00*
Alloy free, short shovel turnings	26.50-27.50
Electric furnace bundles	34.00-36.00

Cast Iron Grades

No. 1 cupola	*43.00-44.00*
Charging box cast	37.00-38.00
Stove plate	*40.00-42.00*
Heavy breakable cast	34.00-35.00
Unstripped motor blocks	29.00-30.00
Brake shoes	32.00-33.00
Clean auto cast	46.00-47.00
No. 1 wheels	43.00-44.00
Burnt cast	33.00-34.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	37.00-38.00
R.R. malleable	45.00-46.00
Rails, 2-ft and under	50.00-51.00
Rails, 18-in. and under	51.00-52.00
Rails, random lengths	45.00-46.00
Cast steel	39.00-40.00
Railroad specialties	39.00-40.00
Uncut tires	41.00-42.00
Angles, splice bars	46.00-47.00
Rails, rerolling	52.00-53.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	190.00-200.00
18-8 turnings	80.00-90.00
430 clips, bundles, solids	80.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting...	37.00-38.00
No. 2 heavy melting...	32.00-33.00
No. 1 bundles	37.00-38.00
No. 2 bundles	27.50-28.50
No. 1 busheling	37.00-38.00
Machine shop turnings	18.00-19.00
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Low phos.	37.00-38.00
Electric furnace bundles	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt	38.00-39.00

CHICAGO

No. 1 heavy melting...	35.00-37.00
No. 2 heavy melting...	32.00-33.00
No. 1 factory bundles	36.00-37.00
No. 1 dealer bundles	35.00-36.00
No. 2 bundles	24.00-25.00
No. 1 busheling	35.00-37.00
Machine shop turnings	17.00-18.00
Mixed borings, turnings	19.00-20.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Cut structurals, 3 ft	*37.00-38.00*
Punchings & plate scrap	38.00-39.00
Electric furnace bundles	36.00-37.00

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Stove plate	*36.00-37.00*
Unstripped motor blocks	28.00-29.00
Clean auto cast	46.00-47.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	38.00-39.00
R.R. malleable	44.00-45.00
Rails, 2-ft and under	*49.00-50.00*
Rails, 18-in. and under	*50.00-51.00*
Angles, splice bars	*44.00-45.00*
Rails, rerolling	50.00-51.00

Stainless Steel Scrap

18-8 bundles & solids	205.00-210.00
18-8 turnings	95.00-100.00
430 bundles & solids	85.00-90.00
430 turnings	45.00-50.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting...	28.50
No. 2 heavy melting...	22.00
No. 1 bundles	29.00
No. 2 bundles	21.00
No. 1 busheling	28.00
Machine shop turnings	13.00
Mixed borings, turnings	13.00
Short shovel turnings	17.00
Punchings & plate scrap	30.00

Cast Iron Grades

Charging box cast	27.00
No. 1 cupola	34.00
Stove plate	30.00
Heavy breakable	25.00
Unstripped motor blocks	20.00
Clean auto cast	38.00
Malleable	30.00

BIRMINGHAM

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	32.00-33.00
No. 2 bundles	23.00-24.00
No. 1 busheling	32.00-33.00
Cast iron borings	17.00-18.00
Short shovel turnings	25.00-26.00
Machine shop turnings	18.00-19.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	45.00-46.00
Stove plate	42.00-43.00
Bar crops and plate	36.00-37.00
Structural plate, 2 ft	36.00-37.00
Unstripped motor blocks	35.50-36.50

Railroad Scrap

No. 1 R.R. heavy melt	36.00-37.00
Rails, 18 in. and under	43.50-44.50
Rails, rerolling	43.00-44.00
Rails, random lengths	39.00-40.00
Angles, splice bars	40.00-41.00
Stand. steel axles	35.00-36.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*37.50-38.00*
No. 2 heavy melting	*34.00-34.50*
No. 1 bundles	*37.50-38.00*
No. 2 bundles	*30.00*
No. 1 busheling	*37.50-38.00*
Electric furnace bundles	41.00
Machine shop turnings	22.50
Mixed borings, turnings	22.00
Short shovel turnings	25.50
Structurals & plate	42.00-43.00
Heavy turnings	34.00-35.00
Couplers, springs, wheels	42.50
Rail crops, 2 ft & under	52.00-53.00

Cast Iron Grades

No. 1 cupola	38.00
Malleable	44.00
Heavy breakable cast	39.00
Drop broken machinery	44.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting...	32.50-33.00
No. 2 heavy melting...	30.00-31.00
No. 1 bundles	32.50-33.00
No. 2 bundles	24.00-25.00
Machine shop turnings	14.00-15.00
Mixed borings, short turnings	15.00-16.00
Short shovel turnings	16.00-17.00
Low phos. (structural & plate)	*34.00-35.00*

Cast Iron Grades

No. 1 cupola	30.00-31.00
Unstripped motor blocks	22.00-23.00
Heavy breakable	31.00-32.00

Stainless Steel

18-8 sheets, clips, solids	200.00-210.00
18-8 borings, turnings	95.00-100.00
430 sheets, clips, solids	75.00-80.00
410 sheets, clips, solids	65.00-75.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	29.50-30.00
No. 2 heavy melting	25.00-25.50
No. 1 bundles	29.50-30.00
No. 2 bundles	22.00-23.00
Mixed borings, turnings	14.50-15.00
Short shovel turnings	15.50-16.00
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast	33.00-34.00

BUFFALO

No. 1 heavy melting...	32.00-33.00
No. 2 heavy melting...	29.00-30.00
No. 1 bundles	32.00-33.00
No. 2 bundles	27.00-28.00
No. 1 busheling	32.00-33.00
Machine shop turnings	20.50-21.50
Short shovel turnings	23.00-24.00
Cast iron borings	22.00-23.00
Low phos.	36.00-37.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	37.00-38.00
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths	35.00-36.00
Rails, 3 ft and under	42.00-43.00
Railroad specialties	36.50-37.50

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting...	33.00-34.00
No. 2 heavy melting...	29.50-30.50
No. 1 bundles	33.00-34.00
No. 2 bundles	24.00-25.00
No. 1 busheling	33.00-34.00
Machine shop turnings	19.00-20.00
Mixed borings, turnings	19.00-20.50
Short shovel turnings	22.00-23.00
Cast iron borings	20.00-21.00
Low phos. 18-in.	38.00-39.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Heavy breakable cast	35.00
Charging box cast	36.00
Drop broken machinery	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 18-in. and under	47.00-48.00
Rails, random lengths	41.50-42.50

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	31.00
No. 2 heavy melting	29.00
No. 1 bundles	31.00
No. 2 bundles	24.50
Machine shop turnings	15.00
Short shovel turnings	17.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	32.50
Heavy breakable cast	32.50
Unstripped motor blocks	32.50
Brake shoes	32.00
Clean auto cast	42.50
Stove plate	36.50

Railroad Scrap

No. 1 R.R. heavy melt	*36.25*
Rails, 18-in. and under	46.00
Rails, random lengths	40.00-41.00
Rails, rerolling	46.00
Angles, splice bars	41.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	31.00
No. 2 heavy melting	27.00
No. 1 bundles	22.50
No. 2 bundles	20.00
No. 3 bundles	14.00
Machine shop turnings	12.00-14.00
Mixed borings, turnings	12.00-14.00
Short shovel turnings	12.00-14.00
Electric furnace, No. 1	35.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*35.00*
Heavy breakable cast	23.00
Unstripped motor blocks	27.00
No. 1 wheels	21.00
Stove plate (f.o.b. plant)	28.00-29.00
Brake shoes	28.00-29.00

Railroad Scrap

(Delivered consumer plant)

Rails, random lengths	30.00-34.00

LOS ANGELES

No. 1 heavy melting	28.00
No. 2 heavy melting	24.00
No. 1 bundles	27.00
No. 2 bundles	22.00
Machine shop turnings	8.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	42.00-44.00

SAN FRANCISCO

No. 1 heavy melting	27.00
No. 2 heavy melting	25.00
No. 1 bundles	26.00
No. 2 bundles	22.00
No. 1 busheling	27.00
Machine shop turnings	8.00
Mixed borings, turnings	8.00
Short shovel turnings	10.00
Cast iron borings	10.00
Cut structurals	27.00
Heavy turnings	9.00
Punchings & plate scrap	27.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

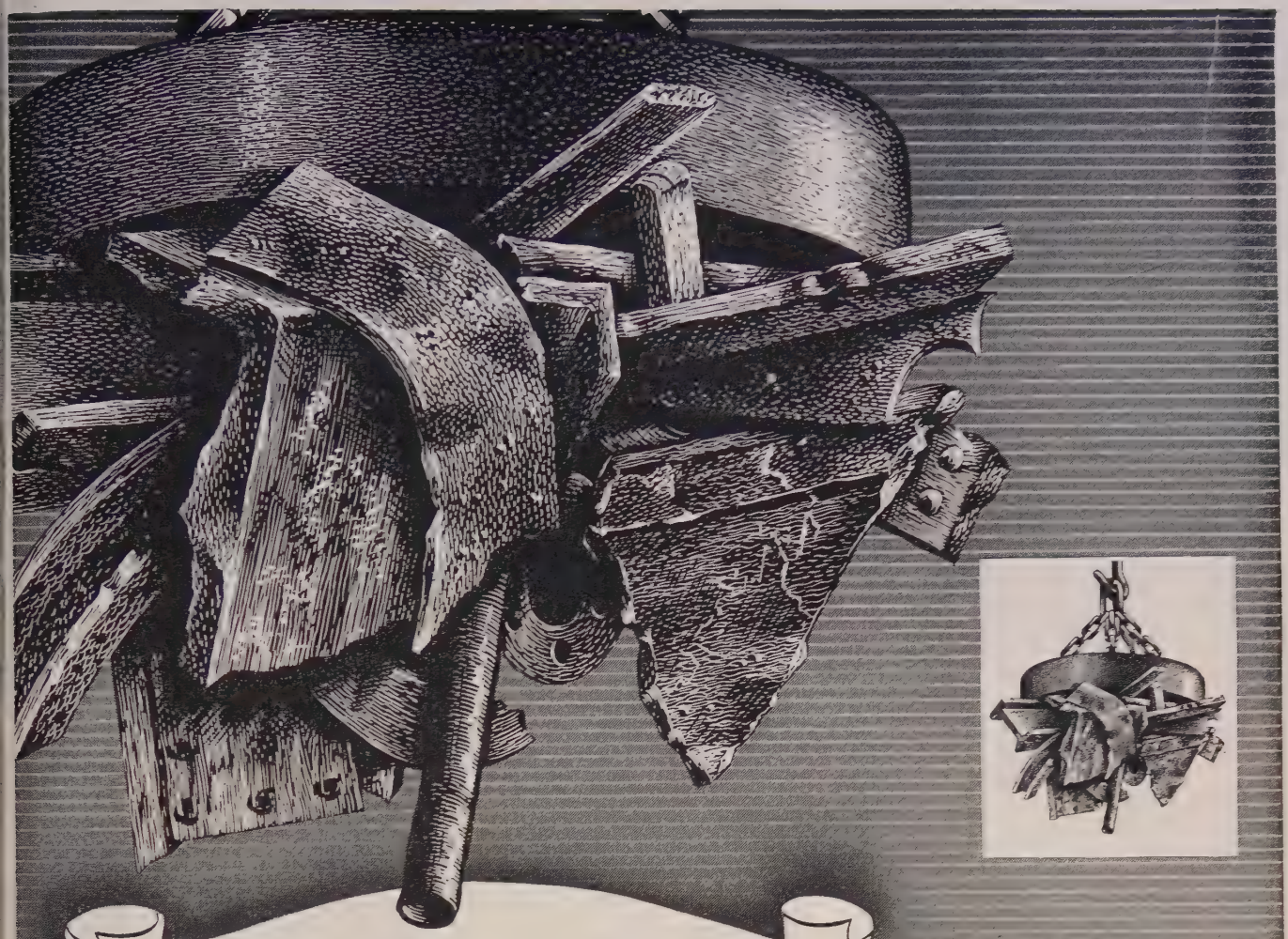
(Delivered prices)

No. 1 heavy melting	32.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00
No. 2 bundles	26.00
Mixed steel scrap	26.00
Mixed borings, turnings	16.00
Rails, remelting	41.00
Busheling, new factory: Prepared	30.00
Unprepared	26.00
Short steel turnings	16.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.



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Structural Shapes . . .

Structural Shape Prices, Page 132

Pressure for deliveries is increasing on the structural mills as seasonal construction requirements expand impressively. Deliveries extend six to seven weeks on standard shapes, and still longer on wide-flange sections, especially smaller sizes.

Reflecting the strong demand, at least two structural producers are no longer furnishing customers with weekly rolling schedules. Business is coming in too rapidly to make weekly scheduling feasible. Customers are being asked to send in their orders further ahead, on a monthly basis if possible.

An impressive feature of the structural market in the New York area is the increasing diversity of work. Included are many multistory office buildings and apartments, shopping centers and public projects, involving bridges, schools and power plants. Not much private industrial work is active in the East, but fabricators report a considerable amount is pending throughout the country. In New England, fabricating contracts in the first quarter were heavier than in the like period a year ago, owing to bridge tonnage which was widely distributed.

February bookings of fabricated structural steel amounted to 230,007 tons, says the American Institute of Steel Construction. This was slightly less than in the previous month, but was 51 per cent greater than the average for February during the 1947-50 base years. Total bookings for the first two months of this year were 468,257 tons, an increase of 24,000 tons over the corresponding period a year ago.

Shipments in February were 200,498 tons, a decrease of 11 per cent from January. Total shipments in the first two months of this year were 426,654 tons, against 328,080 tons average for the base period.

Backlog of orders at end of February totaled 1,360,102 tons.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3020 tons, building construction, Erie Mining Co., Taconite Harbor, Minn., to Bethlehem Steel Co., Bethlehem, Pa.

3000 tons, Muskingum generating station, Relief, O., to the Ingalls Iron Works Co., Birmingham, Ala.

2140 tons, civic center and city hall, New Orleans, to Jones & Laughlin Steel Corp., New Orleans; H. F. Farnsworth & Co. Inc., New Orleans, general contractor.

1900 tons, building work, International Business Machines Corp., Kingston, N. Y., to Ingalls Iron Works Co., Birmingham.

1605 tons, apartment, Second Ave. between 66th and 67th Sts., New York, through Simon Bros., to Harris Structural Steel Co., New York.

795 tons, approach work, contract 45-B, elevated highway, South St., New York, through Edenwald Contracting Co., to Bethlehem Steel Co., Bethlehem, Pa.

665 tons, foundry, Chambersburg Engineering

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2. Fine opportunity for young Mechanical or Electrical Engineer who has had three to five years production processing and varied foundry development experience; preferably in foundry molding, coremaking and auxiliary equipment. This position calls for cooperation with top level management and includes interesting activities in co-ordinating plans relative to development program.

Qualified applicants please reply fully. State complete history of personal background, work background, related qualifications, salary requirements, etc. All replies will be treated confidentially.

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INDUSTRIAL SALESMAN or SALES TRAINEE, age 25-35, for established supplier furnishing basic raw material to the iron and steel industry. Metallurgical education or knowledge of iron and steel melting essential. Territory—Eastern Pennsylvania, New Jersey and Eastern New York. Prefer applicant now living in this area. Salary commensurate with experience plus expenses. Reply Box 230, Penton Building, Cleveland 13, Ohio, advising previous experience, qualifications and salary expected.

Expanding, progressive conveyor manufacturing company located in the East has need for an ENGINEERING EXECUTIVE to take over all phases of engineering and manufacturing. Mechanical Engineering background, shop experience necessary. Preferably individual with conveyor experience but a good background in machine design would be satisfactory. Please submit complete resume including age, education, and experience. Reply Box 238, STEEL, Penton Building, Cleveland 13, Ohio.

Representatives Wanted

REPRESENTATIVES WANTED to sell PRECISION SPRINGS on commission basis. Top quality and excellent deliveries. All territories open. Complete information furnished upon request. Reply Box 222, STEEL, Penton Building, Cleveland 13, Ohio.

For Sale

FOR SALE
One Automatic Cut-Off Shear, Capacity 48" wide x 16 gauge, consisting of shear roll feed with straightener and uncoiling equipment. In excellent condition, operated less than four years. Reply Box 239, STEEL, Penton Building, Cleveland 13, Ohio.

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MECHANICAL ENGINEER, age 40, graduate, 17 years varied staff and supervisory experience general plant engineering, specifications, design, new costruction and project engineering seamless and welded tube mills and related facilities. Desires position executive assistant or department head. Midwest or far west preferred. Reply Box 232, STEEL, Penton Building, Cleveland 13, Ohio.

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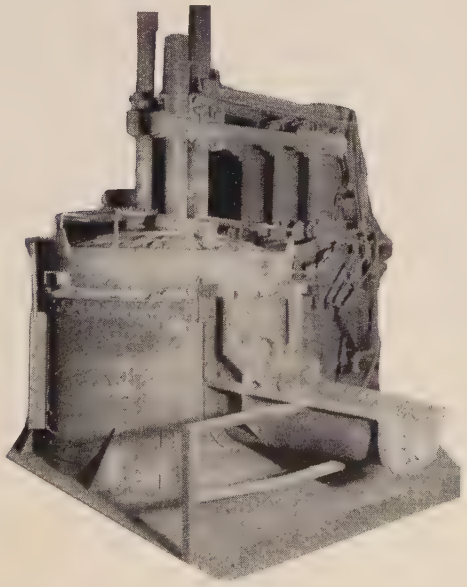
2—ELECTRIC FURNACES PRICED AT FRACTION OF REPLACEMENT COST!



AMERICAN BRIDGE HEROULT
TYPE 1½

Fixed Roof, tilting Electric Furnace, 1½ tons per hour.

Switchboard, instruments, transformers etc.

WALKER 5-8300

AARON MACHINERY COMPANY, INC.
45 Crosby St., New York 12, N. Y.

Coming
April 18
IN
STEEL

Maximize Your Facilities with Better Plant Layout

In the third in STEEL's ten-part Program for Management for 1955, the editors explore metalworking's plant layout problems. During wartime and post-war expansions, many plants grew like Topsy. Layouts were inefficient and inadequate for what's needed in a competitive economy. In preparation for you is a report on how to arrange your equipment more efficiently, improve flow of materials and minimize handling.

Co., Chambersburg, Pa., to Belmont Iron Works, Eddystone, Pa.

620 tons, brush plant and warehouse, Albany, N. Y., to James McKinney & Son.

550 tons, Pennsylvania train shed, Pittsburgh, to Central Steel Construction Corp., Buffalo.

540 tons, ground reservoir, Peoria, Ill., through American Water Works Service Co., Philadelphia, to Nooter Corp.

435 tons, three state bridges, Orange-Athol, Mass., to American Bridge Division, U. S. Steel Corp., Pittsburgh; Bayer & Mingolle Construction Co., Worcester, Mass., general contractor.

425 tons, tower work, mostly alterations, Connecticut Light & Power Co., Hartford, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

250 tons, high school, Bellefont, Pa., to Goetz Welding Co., Harrisburg, Pa.

230 tons, Bald Eagle-Nittany School, Clinton county, Pa., to Daulphin Steel Engineering Co.

215 tons, plate girder bridge, Willamette river, Oregon, to American Bridge Division, U. S. Steel Corp., Portland, Oreg.; general award by Bureau of Public Roads, Portland, to Hamilton & Thomas, Eugene, Oreg., low at $108,890.

180 tons, warehouse, National Biscuit Co., Philadelphia, to Robinson Steel Co., Philadelphia.

155 tons, warehouse, International Business Machines Corp., Kingston, N. Y., through Turner-Campbell, to Belmont Iron Works, Eddystone, Pa.

STRUCTURAL STEEL PENDING

6000 tons, shopping center, Paramus, N. J., in which R. H. Macy & Co., New York, is reported interested; pending.

2470 tons, five-span girder, Chicopee river, and four-span stringer, Three Rivers road, Massachusetts turnpike, Ludlow-Wilbraham-Palmer, Mass., Brunalli Construction Co., Southington, Conn., and Grand View Construction Co., Mt. Vernon, N. Y., joint low bid on general contract.

2200 tons, Public School of Printing, New York; previously noted as placed; project withdrawn for redesigning.

2000 tons, branch store, R. H. Macy & Co., Roosevelt Field, Long Island, N. Y.; pending.

1785 tons, bridges, East Chicago-Hammond, Ind.; bids Apr. 13, Indiana Toll Road Commission, Indianapolis.

1125 tons, 12 bridges, Massachusetts turnpike, Westfield-West Springfield, Mass.; Lane Construction Co., Meriden, Conn., low on general contract; also 1645 tons, reinforcing bars, and 210 tons, steel sheet piling.

1000 tons, milk processing plant, Carnation Co., Seattle; plans by S. B. Barnes, structural engineer, Los Angeles, Calif.; bids soon.

500 tons, Lord & Taylor store, Garden City, Long Island, N. Y.; bids closed.

380 tons, three bridges, Massachusetts turnpike, Warren-Brimfield, Mass.; A. J. Orlando Construction Co., Whitestone, N. Y., low on general contract.

375 tons, high school, Shamokin, Pa.; bids closed Apr. 5.

325 tons, galvanized transmission towers; Bethlehem Pacific Coast Steel Corp., Seattle, low at $94,886 to Seattle Light Department.

315 tons, four state bridges, Manchester, N. H.; Frank Palazzi & Sons Inc., Johnston, R. I., low on general contract; also 215 tons, reinforcing bars.

258 tons, Washington state overcrossing, Spokane, Wash.; bids to Olympia, Wash., Apr. 12.

200 tons, hangar, warehouse, etc., Galena Air Base, Alaska; Peter Kiewit Sons Co., Seattle, low at $4,807,810.

113 tons, state bridge repairs, Mercer county, Pa.; bids close Apr. 22.

REINFORCING BARS . . .

REINFORCING BARS PLACED

850 tons, civic center and city hall, New Orleans, to Laclede Steel Co., New Orleans; R. F. Farnsworth & Co. Inc., New Orleans, general contractor.

250 tons, Greene street crossing, Spokane, Wash., Washington state project; to Northwest Steel Rolling Mills Inc., Seattle; Henry Hagman, Cashmere, Wash., general contractor, low at $359,328.

107 tons, Northern Pacific railway, freight warehouse, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co., Seattle, general contractor.

REINFORCING BARS PENDING

2500 tons, Alaska railroad, sea terminal, Seward, Alaska; bids to Anchorage, Alaska, Apr. 21.

500 tons, two residence halls, Washington State College, Pullman, Wash.; James I. Barnes, Seattle, low at $1,578,980.

250 tons, Seattle School Board warehouse; Howard S. Wright Construction Co., Seattle, general contractor.

212 tons, Washington state, Spokane county, overcrossing; bids to Olympia, Wash., Apr. 12.

114 tons, Washington state, King county, railroad overpass; general award to John E. Alexander, Seattle, low at $92,158.

100 tons, Idaho state turberculosis hospital, Gooding, Idaho; general contract to W. R. Cahoon Construction Co., Pocatello, Idaho, low at $928,472.

PLATES . . .

PLATES PLACED

10,850 tons, 58 storage tanks, American Oil Co., Yorktown, Va., to Chicago Bridge & Iron Co., Chicago.

1000 tons, 18 to 30-in. water supply line, Hoquiam, Wash., to Beall Pipe & Tank Corp., Portland, Oreg.

500 tons, 1-million-gal standpipe and 500,000-gal elevated tank, Colonie, N. Y., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

150 tons, 500,000-gal elevated water tank, Albertville, Ala., to Chattanooga Boiler & Tanks Co., Chattanooga, Tenn.

PLATES PENDING

500 tons, storage tanks, Adak, Alaska; opening Apr. 1.

PIPE . . .

CAST IRON PIPE PLACED

307 tons, Ft. Lewis, Wash., housing project, to U. S. Pipe & Foundry Co., Seattle.

112 tons, Shelton, Wash., to U. S. Pipe & Foundry Co., Seattle.

CAST IRON PIPE PENDING

1154 tons, Yakima, Wash., bids Apr. 5.

146 tons, Hazelwood, Oreg., bids Apr. 6.

91 tons, Mukilteo, Wash., bids Apr. 1.

90 tons, Portland (Oreg.) Water District, bids Apr. 1.

RAILS, CARS . . .

LOCOMOTIVES PLACED

New York Central, one diesel passenger locomotive, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

New York, New Haven & Hartford, one diesel passenger locomotive, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

Union Pacific, twenty 1000-hp diesel yard switchers, to American Locomotive Co., New York.

RAILROAD CARS PLACED

Monongahela Connecting Railroad, subsidiary of Jones & Laughlin Steel Corp., repair of 75 mill-type gondola cars to the Greenville Steel Car Co., Greenville, Pa.

New York Central, five low-slung, aluminum passenger cars, to Pullman-Standard Car Mfg. Co., Chicago.

New York, New Haven & Hartford, five low-slung, aluminum passenger cars, to Pullman-Standard Car Mfg. Co., Chicago.

Pennsylvania, seven low-slung stainless passenger cars and one power car, to the Budd Co., Philadelphia.

Santa Fe, 47 passenger cars, to the Budd Co., Philadelphia.

RAILS PLACED

Southern, 47,000 tons; major portion to the Tennessee Coal & Iron Division, U. S. Steel Corp., Birmingham; remainder to the Steelton, Pa., plant of the Bethlehem Steel Co.

RAILROAD MATERIAL PLACED

Alaska railroad, 400 steel railroad car wheels; bids to General Services, Seattle, Mar. 29.

Advertising Index

Aaron Machinery Co., Inc. 153
Air Products, Inc. 101
Ajax Engineering Corporation 11
Alan Wood Steel Co. 62
Allegheny Ludlum Steel Corporation 24
Allen-Bradley Co. 17, 18
Allied Research Products, Inc. 152
Allmetal Screw Products Co., Inc. 131
Alter Co., Alloy Metal Division 145
Aluminum Company of America 147
American Nickeloid Co. 72
American Smelting & Refining Co., Federated Metals Division 116
American Wheelabrator & Equipment Corporation 7
Armco Steel Corporation 31
Arwood Precision Casting Corporation 142
Austenal Laboratories, Inc., Microcast Division 110

Babcock & Wilcox Co., The, Refractories Division 93
Babcock & Wilcox Co., The, Tubular Products Division ..... Inside Front Cover
Bedford Foundry & Machine Co., Inc. 26
Beryllium Corporation, The 109
Bethlehem Steel Co. 1
Bixby, R. W., Inc. 153
Brad Foote Gear Works, Inc. 140
Bullard Co., The 87
Bunting Brass & Bronze Co., The 74

Carpenter Steel Co., The 22
Chase Brass & Copper Co. 127
Chicago Steel Service Co. 44
Cincinnati Shaper Co., The 23
Cleveland Steel Tool Co., The 148
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division 61
Continental Steel Corporation 121
Continental Tool Works Division of Ex-Cell-O Corporation 4
Coolidge Corporation 55
Crucible Steel Company of America 119
Cullen-Friestedt Co. 122

Detroit Stamping Co. 54
Diamond Mfg. Co. 148
Drop Forging Association 105
Duraloy Co., The 92
Dynamatic Division, Eaton Manufacturing Co. 73

Eastern Machine Screw Corporation, The ..148, 153
Eastman Kodak Co., X-Ray Division 89
Eaton Manufacturing Co., Dynamatic Division 73
Electric Controller & Mfg. Co., The 32
Electric Equipment Co. 153
Electric Service Co., Inc., The 153
Ex-Cell-O Corporation 5
Ex-Cell-O Corporation, Continental Tool Works Division 4

Fairfield Manufacturing Co. 118
Falk Corporation, The 90
Farrel-Birmingham Co., Inc. 102
Farval Corporation, The ..... Inside Back Cover
Federated Metals Division of American Smelting & Refining Co. 116

Gisholt Machine Co. 27
Glazer Steel Corporation 153
Gould-National Batteries, Inc. 124
Gray Iron Founders' Society, Inc. 156
Green, A. P., Fire Brick Co. 68

Handy & Harman 115
Hannifin Corporation 94
Heresite & Chemical Co. 67
Hobart Brothers Co. 3
Hoover Co., The, Electric Motor Division 108
Hyatt Bearings Division, General Motors Corporation 48

Industrial Products Suppliers 146
International Nickel Co., Inc., The 28
Iron & Steel Products, Inc. 153

Joliet Wrought Washer Co. 149
Jomac, Inc. 104
Jones & Lamson Machine Co. 20, 21
Jones & Laughlin Steel Corporation 141

Kaiser Aluminum & Chemical Corporation ..96, 97
Kardong Brothers, Inc. 142
Kirk & Blum Mfg. Co., The 12

Laminated Shim Co., Inc. 104
Lamson & Sessions Co., The 106
Lapointe Machine Tool Co., The 76
La Salle Steel Co. 95
Lewthwaite, T. H., Machine Co., Inc. 148
Luria Brothers & Co., Inc. 151

Magnaflux Corporation 75
Manheim Manufacturing & Belting Co. 111
Matthews, Jas. H., & Co. 142
Mesta Machine Co. ..... Back Cover
Metal Treating Institute 120
Morgan Construction Co. 43
Morse Twist Drill & Machine Co. 8, 9
Mundt, Charles, & Sons 16

National Machinery Co. 64, 65
National Steel Corporation 113
New Departure, Division of General Motors ... 51
Newport Steel Corporation 129
Niagara Blower Co. 112
Nilson, A. H., Machine Co. 25

Ohio Steel Foundry Co., The 56
Owen Bucket Co., The 148

Pennsylvania Engineering Corporation 85
Peterson Steels, Inc. 66
Phillips Petroleum Co. 2
Pittsburgh Lectromelt Furnace Corporation .. 123
Poole Foundry & Machine Co. 148

Republic Steel Corporation 14, 15
Rigidized Metals Corporation 146
Rockford Machine Tool Co. 117

Sandvik Steel, Inc. 114
Service Machine Co., Inc. 146
Sharon Steel Corporation 13
Silent Hoist & Crane Co. 94
Simmons Machine Tool Corporation 122
Stamco, Inc. 148
Standard Tube Co., The 69
Superior Tube Co. 59

Tempil Corporation 155
Thomas Machine Manufacturing Co. 131
Timken Roller Bearing Co., The, Steel & Tube Division 52
Tube Methods, Inc. 6

Udylite Corporation, The 10

Valley Mould & Iron Corporation 34

Weirton Steel Co. 113
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 61
Worcester Stamped Metal Co. 146
Worthington Corporation, Reciprocating Pump Division 138

Youngstown Sheet & Tube Co., The 19

Table of Contents, Page 5

Classified Advertising, Page 153

Tempilstik°

FOR ALL HEAT-DEPENDENT OPERATIONS

looks like a crayon...

marks like a crayon...

tells temperatures like a precision instrument!

Sixty-three different compositions enable you to determine and control working temperatures from 113° to 2000° F. TEMPILSTIK° marks on workpiece "say when" by melting at stated temperatures—plus or minus 1%.

ALSO AVAILABLE IN LIQUID AND PELLET FORM . . . WRITE PROMOTION DEPT. FOR SAMPLE TEMPIL° PELLETS . . . STATE TEMPERATURES OF INTEREST—PLEASE!

Tempil°
CORPORATION
132 WEST 22ND STREET
NEW YORK 11, N. Y.

83% saving with Gray Iron

A saving of over 80% on original cost by redesigning in Gray Iron! Also, longer life and improved operating characteristics are provided by the cast part.

This happens every day... someone decides to adopt Gray Iron and confirms its engineering advantages. Have you?

Call your nearest Society member foundry and the full facilities of this association will be available to help you. Or, write direct to Gray Iron Founders' Society, Inc., National City-E. 6th Bldg., Cleveland 14, Ohio, for helpful technical and business information.

MAKE IT BETTER WITH GRAY IRON

This symbol assures you the most for your casting dollar

Here's why it pays to call in one of the more than 500 leading foundries displaying the Society symbol:

- The most recent technical and business information is available to each member through the Society to help you design better products at lower cost.
- The use of sound cost accounting procedures is recommended and encouraged among Society member foundries, assuring full value for your casting dollar.
- Improved castings result from the advanced techniques and the high sense of responsibility of Society members.

GRAY IRON FOUNDERS' SOCIETY

Farval helps mill and drill a camshaft every 13 seconds

FARVAL—
Studies in Centralized Lubrication
No. 164

CENTRALIZED lubrication is a must for automatic production on machine tools like this Kearney & Trecker four-station rotary indexing machine. Protected by a Farval centralized system, this machine mills and drills 288 camshafts an hour.

There's never any time lost for oiling or greasing because *Farval lubricates while a machine is in operation.* Uncounted hundreds of hours of oiling labor are saved, too. Thus, this foolproof system of lubrication keeps machines producing parts faster and at less cost, and keeps maintenance costs at a minimum. Once Farval has been installed on a machine tool, it soon pays for itself —*often in a matter of a few months!*

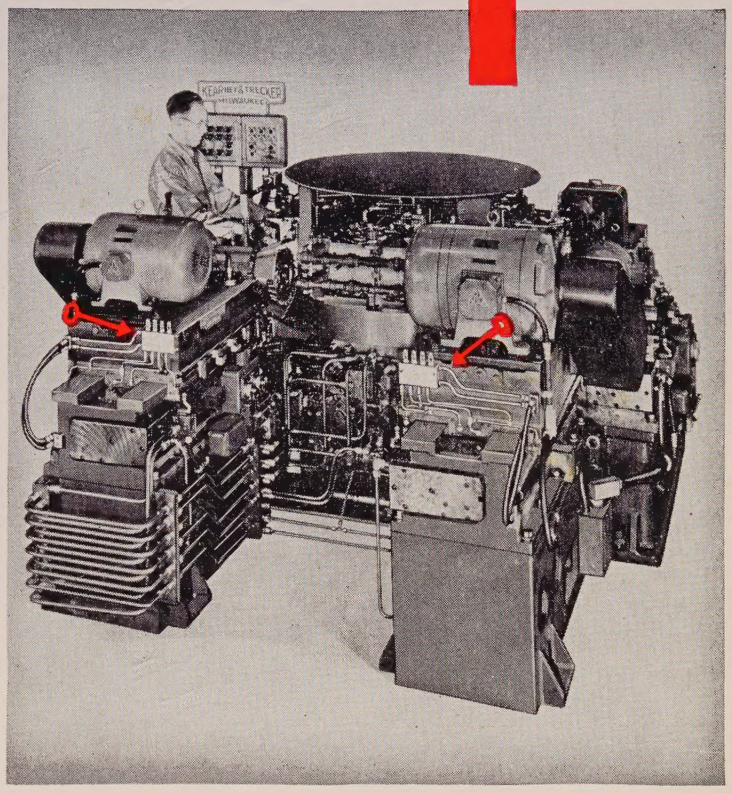
How Farval Works

FARVAL is the Dualine system of centralized lubrication that delivers a measured amount of clean lubricant at regular intervals to *every* bearing. From a central station, lubricant is pumped under pressure, by hand lever or automatically, to a measuring valve at each bearing, delivering the *exact* amount of lubricant required.

Free Lubrication Survey

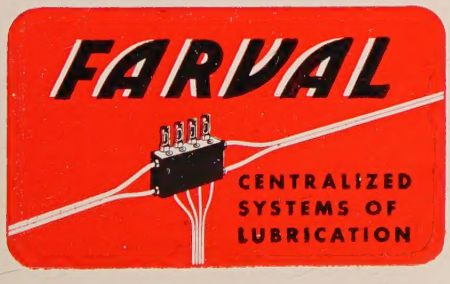
Let us send one of our lubrication engineers to inspect your plant equipment. Without obligation, he will present a written analysis of what Farval can do for you. Write for Bulletin 26 for the complete Farval story. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

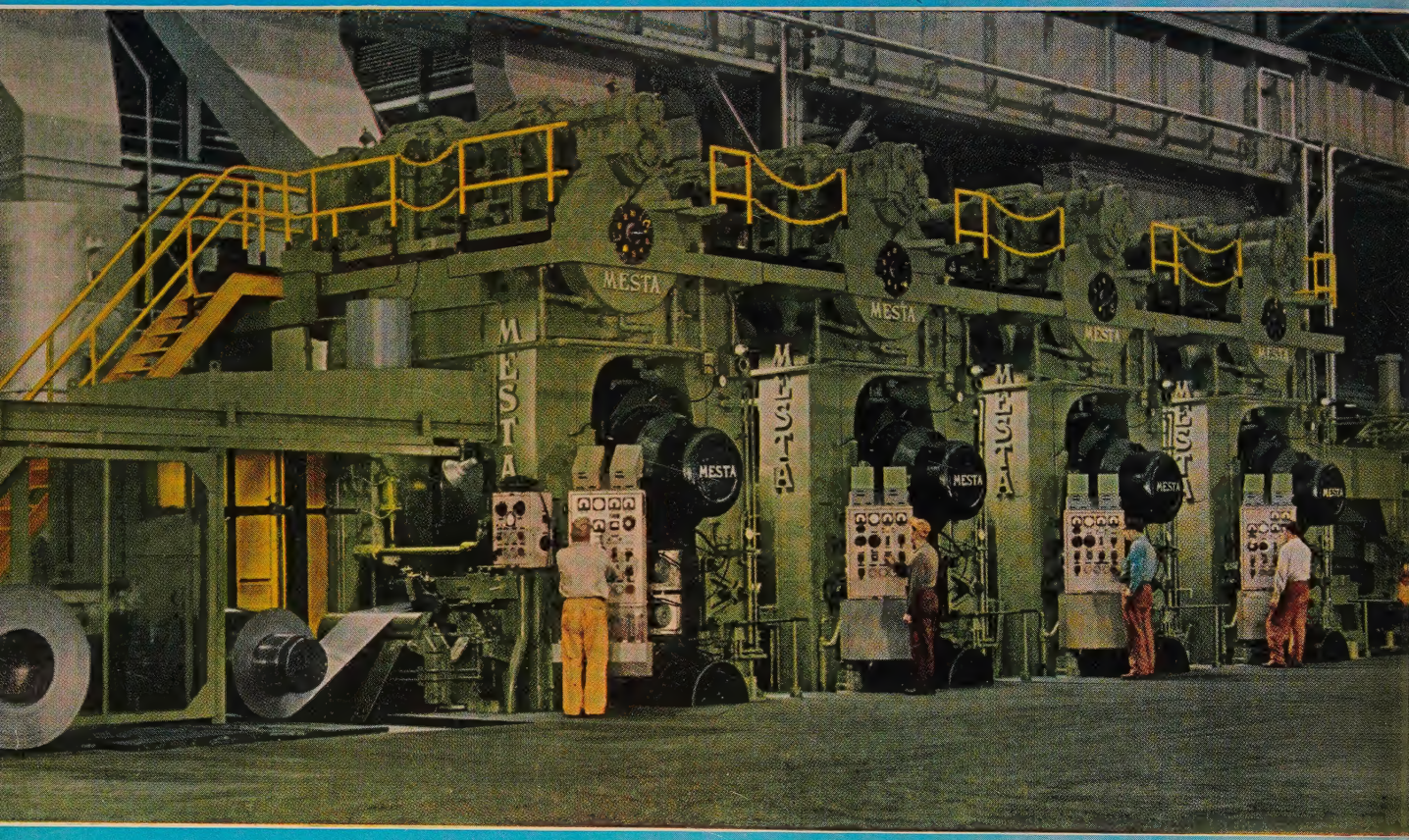


KEYS TO ADEQUATE LUBRICATION—Wherever you see these Farval valve manifolds, dual lubricant lines and central pumping station, you know a machine is being properly lubricated.

This Kearney & Trecker four-station rotary indexing machine at a famous automobile plant has 22 points of lubrication served by a Farval automatic system handling light oil.



HIGH-SPEED TANDEM COLD MILLS



Mesta 56" Four-High, Four-Stand Tandem Cold Mill
Installed at the Brackenridge Plant of Allegheny-Ludlum Steel Corp.

Designed and Built by MESTA

FOR THE COLD REDUCTION OF STAINLESS, SILICON, HIGH-ALLOY AND CARBON STEELS

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA